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Research Report 2006

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Graduate School of Engineering and Management

GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT
AIR FORCE INSTITUTE OF TECHNOLOGY
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

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AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

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Air Force Institute of Technology
Research Report 2006
Foreword

Research is the cornerstone of the dramatic advances in air, space, and cyber technology that underpin the nation's ability to meet the international and homeland security challenges of tomorrow. Research is also an integral part of graduate education, providing graduates with in-depth knowledge, critical thinking skills, and problem solving abilities. At the Air Force Institute of Technology (AFIT), our faculty and students engage in research with the goal of sustaining the technological supremacy of the United States Air Force (USAF) and the Department of Defense (DoD).

AFIT maintains active partnerships with our Air Force's organizations and operational communities as well as the DoD and other federal agencies to maximize the contributions of our research programs to national needs. Our faculty and students also engage in collaborations with researchers at universities throughout the nation to advance the state-of-the-art in a variety of disciplines. AFIT cooperates with commercial enterprises to ensure timely transfer of new technology to US industry through Cooperative Research and Development Agreements (CRADAs) whenever appropriate.

This Research Report is prepared annually to report on the significant contributions of this institution; to solicit continued involvement and support from our Air Force, DoD, and other federal partners; and to encourage new sponsors to participate in AFIT's research programs. AFIT welcomes new opportunities to engage in research projects that are of mutual interest to our customers, faculty, and students.

Heidi R. Ries, Ph.D.
Dean for Research
Graduate School of Engineering
and Management

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1. INTRODUCTION

1.1 OVERVIEW

This Research Report presents the FY06 research statistics and contributions of the Graduate School of Engineering and Management (EN) at AFIT. AFIT research interests and faculty expertise cover a broad spectrum of technical areas related to USAF needs, as reflected by the range of topics addressed in the faculty and student publications listed in this report. In most cases, the research work reported herein is directly sponsored by one or more USAF, or DoD agencies.

AFIT welcomes the opportunity to conduct research on additional topics of interest to the USAF, DoD, and other federal organizations when adequate manpower and financial resources are available and/or provided by a sponsor. In addition, AFIT provides research collaboration and technology transfer benefits to the public through Cooperative Research and Development Agreements (CRADAs). Interested individuals may discuss ideas for new research collaborations, potential CRADAs, or research proposals with individual faculty using the contact information in Appendix A or via the AFIT Yellow Pages at www.afit.edu.

Additional information on the research programs at AFIT may also be found on the research web home page at http://www.afit.edu/en/enr/. The Office of Research and Sponsored Programs, Graduate School of Engineering and Management can be reached at 937-255-3633, (DSN 785-3633) or by email: research@afit.edu. The primary points of contact are Col. Michael J. Caylor, Acting Director of Sponsored Programs, 937-255-3636 x7407, DSN 785-3636 x7407 and Dr. Heidi R. Ries, Dean for Research, 937-255-3636 x4544, DSN 785-3636 x4544.

1.2 THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT RESEARCH COLLABORATION

As detailed in the 2006-2007 catalog at http://www.afit.edu/en/ener/catalog.cfm, AFIT offers Master's and Doctoral programs in a variety of disciplines through six departments: the Department of Mathematics and Statistics (ENC), the Department of Electrical and Computer Engineering (ENG), the Department of Engineering Physics (ENP), the Department of Operational Sciences (ENS), the Department of Systems and Engineering Management (ENV), and the Department of Aeronautics and Astronautics (ENY). In all of these disciplines, research is an integral component of graduate education, developing an individual student's skills and providing new knowledge of interest to many.

AFIT produced Research Activities Brochures (http://www.afit.edu/en/enr/ResearchNews.cfm) in an effort to involve sponsor organizations in research and education. A brief listing of each department's research areas of emphasis appears below. Please contact the faculty, relevant departmental office, or the Office of Research and Sponsored Programs for further information.

The **Department of Aeronautics and Astronautics** invites research topic proposals and collaborative suggestions for the Aeronautical, Astronautical and Systems Engineering programs. The following list highlights the Department's research specialties:

Aeroelasticity and Design Optimization
Aerospace Structures and Materials
Analysis of Computer Turbines
Autonomous Control of UAVs
Computational Fluid Dynamics
Control of High Performance Aircraft
Dynamic Flight Simulation
Experimental Fluid Dynamics
High Velocity Impact
Impact Dynamics
Inflatable Space Structures
Materials and Structural Analysis
Mechanics of Materials and Structures
Micro Air Vehicles
Non-Linear Dynamics
Reentry Dynamics
Rocket & Space Propulsion
Rotocraft Aeromechanics
Satellite Cluster Dynamics, Navigation, & Control
Systems Engineering

The **Department of Electrical and Computer Engineering** invites research topic proposals and collaborative suggestions for the Electrical Engineering, Computer Engineering and Computer Science programs. The following list highlights the Department's research specialties:

Artificial Intelligence
Automatic Target Recognition
Communications/Radar
Computer Communication Networks
Cyber Operations and Security
Electromagnetics/Low Observables
Evolutionary Algorithms
Guidance, Navigation and Control
Information Visualization
Information Engineering, Exploitation, and Dissemination
Micro and Nanosystems
Parallel and Distributed Processing
Signal and Image Processing
Software Engineering
Wireless Networks
Wireless Sensor Networks

The **Department of Engineering Physics** invites research topic proposals and collaborative suggestions for the Applied Physics, Nuclear Engineering, Electro-Optics (jointly operated with the Department of Electrical and Computer Engineering), and Materials Science (jointly operated with the Department of Aeronautics and Astronautics) programs. The following list highlights the Department's research specialties within these programs:

Center for Directed Energy (CDE)
Center for MASINT Studies and Research (CMSR)
Combating Weapons of Mass Destruction
Computational Physics
Counterproliferation
Directed Energy Weapons
Electronic and Photonic Materials
Lasers and Electro-Optics
Nuclear Weapons and Effects
Remote Sensing and Signature Analysis
Space Weather

The **Department of Mathematics and Statistics** invites research topic proposals and collaborative suggestions for the following research specialties:

Acoustic Wave Scattering
Category Theory
Combinatorial Optimization
Design of Experiments
Electromagnetics
Gait Recognition
Image Analysis
Information Fusion
Multiscale Methods
Nonlinear Optimization
Numerical Analysis
Partial Differential Equations
Reliability
Wavelets

The **Department of Operational Sciences** invites research topic proposals and collaborative suggestions within the areas of Operations Research and Logistics Management. The following list highlights the Department's research specialties:

Applied/Multivariate Statistics
Center for Operational Analysis (COA)
Decision and Risk Analysis
Information Operations/Information Warfare
Inventory Management/Theory
Math Programming and Optimization
Network Modeling
Operational Modeling and Simulation
Operational Problems and Heuristic Modeling
Sensor/Classifier Fusion
Space and International Logistics
Space Logistics Modeling
Stochastic Systems Analysis
Supply Chain Management

The **Department of Systems and Engineering Management** is seeking research topic proposals and collaborative suggestions for the Cost Analysis, Engineering Management, Environmental Engineering and Science, Information Resource Management, and Research and Development Management programs. The following list highlights the Department's research specialties:

Applied Environmental Sciences
Cost Analysis
Crisis Project Management
Crisis Engineering Services Management
Crisis Knowledge Management
Defense Product Development
Economics and Finance
Facility and Infrastructure Management
Information Assurance and Security
Knowledge and Strategic Information Management
Leadership and Management
Multidisciplinary Distributed Cognition
Organizational Change and Theory
Organizational Control Center Performance
Sustainable Development
System Dynamics Modeling
Technology Development and Application

Another avenue for educational and research collaboration with the Graduate School of Engineering and Management is through association with one or more of **AFIT's Research Centers**. A brief listing of each Center's educational or research areas of emphasis appears below. Please contact the Centers directly (see Ch. 6), or contact the Office of Research and Sponsored Programs for further information (937-255-3633, DSN 785-3633).

The **Advanced Navigation Technology (ANT) Center** is a forward-looking navigation research center seeking to identify and solve tomorrow's most challenging navigation problems by focusing on three research thrusts: multiple-vehicle autonomous navigation and control, non-GPS precision navigation, and robust GPS navigation.

The **Center for Directed Energy (CDE)** is dedicated to Air Force and DoD research in high energy lasers (HEL), high power microwaves (HPM), and their enabling technologies. The Center is an advocate for transitioning these systems to the battlefield through vigorous scientific and engineering research, graduate education programs and diverse consulting activities.

The **Center for Information Security Education and Research (CISER)** is one of the National Security Agency (NSA) and Department of Homeland Security's designated Centers of Academic Excellence in Information Assurance Education (CAE/IAE). CISER is also a National Science Foundation Cyber Corp institution. CISER's objective is to increase the number of Information Assurance (IA) professionals through graduate-level education, degrees, and certificates in IA.

The **Center for MASINT Studies and Research (CMSR)** is focused on Air Force and Department of Defense Measurement and Signature Intelligence (MASINT) scientific, technical and operational activities through graduate research programs. CMSR is a national resource for educating a new generation of MASINT professionals.

The **Center for Operational Analysis (COA)** directs defense relevant research and timely technology transfer in providing approaches and solutions to current and future operational and resource issues while developing critical and forward thinking analysts, managers, and leaders.

The **Center for Space Studies and Research (CSSR)** coordinates and focuses AFIT's research, education, and consultation activities to ensure that AFIT is responsive to the national security space community.

The **Center for Systems Engineering (CSE)** is established to promote education, training, research, and consultation throughout the DoD in the best practices of Systems Engineering, Systems Architecture, Evolutionary Acquisition, Risk Management, and Total Life Cycle Project Management.

2. SPECIAL RECOGNITIONS

2.1 FACULTY FELLOWS

Bridgman, Charles J., Professor Emeritus of Nuclear Engineering, Department of Engineering Physics, Fellow of the American Nuclear Society.

Elrod, William E., Professor Emeritus of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of American Society of Mechanical Engineers International.

Franke, Milton E., Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers International.

Houpis, Constantine H., Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

Mall, Shankar, Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers International.

Maybeck, Peter S., Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

Pachter, Meir, Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

Palazotto, Anthony N., Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Civil Engineers.

Ruggles-Wrenn, Marina B., Associate Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers International.

Soni, Som R., Associate Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society for Composites.

Thomas, M. U., Dean, Graduate School of Engineering and Management, Fellow of the Institute of Industrial Engineers, Fellow of the American Society of Quality; Fellow of the Institute for Operations Research and Management Sciences.

Torvik, Peter J., Professor Emeritus of Aerospace Engineering and Engineering Mechanics, Department of Aeronautics and Astronautics, Fellow of the American Institute of Aeronautics and Astronautics, Fellow of American Society of Mechanical Engineers International.

2.2 PROFESSIONAL CERTIFICATIONS

Anthenien, Ralph A., Professional Engineer, State of Ohio

Badiru, Adedeji B., Leadership Certificate, University of Tennessee Leadership Institute

Badiru, Adedeji B., Professional Engineer, State of Oklahoma

Baldwin, Rusty O., Professional Engineer, State of Ohio

Baldwin, Rusty O., Certified Information Systems Security Professional (CISSP)

Cunningham, William A. III, Certified Transportation and Logistics (CTL) by the American Society of Transportation and Logistics (AST&L)

England, Ellen C., Certified Industrial Hygienist, American Board of Industrial Hygiene, National Certification

England, Ellen C., Certified Safety Professional, Board of Certified Safety Professionals, National Certification

Goltz, Mark N., Hazardous Waste Management Specialty Certification as a Diplomate Environmental Engineer, American Academy of Environmental Engineers

Goltz, Mark N., Professional Engineer, State of Minnesota

Greendyke, Robert B., Professional Engineer, State of Texas

Grimaila, Michael R., Gold Standard, Level 4, Security Essentials Certification (GSEC) from the SysAdmin, Audit, Network, Security Institute's (SANS) Global Information Assurance Certification (GIAC) Program

Grimaila, Michael R., Certified Information Security Manager (CISM), Information Systems Audit and Control Association (ISACA)

Heil, Michael L., Professional Engineer, State of Colorado

Houpis, Constantine H., Professional Engineer, State of Ohio

Kunz, Donald L., Professional Engineer, Commonwealth of Virginia

Macola, Carolyn M. Certified Hazardous Materials Manager, Master Level

Mullins, Barry E., Professional Engineer, State of Colorado

Palazotto, Anthony N., Professional Engineer, State of Ohio

Perram, Glen P., Professional Engineer, State of Ohio

Quinn, Dennis W., Professional Engineer, State of Ohio

Reeder, Mark F., Professional Engineer, State of Ohio

Tenney, Curtis G., Certified Housing Development Finance Professional

Thomas, M. U., Professional Engineer, State of Michigan

2.3 RESEARCH AWARDS

2.3.1 FACULTY

CANFIELD, ROBERT A., [ENY]

American Institute of Aeronautics and Astronautics Multidisciplinary Design Optimization Technical Committee Outstanding Service Award, 2005–2006.

CHRISSIS, JAMES W., [ENS]

"A Reach-Based Approach to Screening Actors of Interest in Organizations", *74th Military Operations Research Society Symposium*, June 2006. Best Paper WG-8 Information Operations/Information Warfare.

DECKRO, RICHARD F., [ENS]

"A Reach-Based Approach to Screening Actors of Interest in Organizations", *74th Military Operations Research Society (MORS) Symposium*, June 2006. Best Paper WG-8 Information Operations/Information Warfare.

"Mathematical Framework for Measuring Effectiveness", *74th Military Operations Research Society (MORS) Symposium*, June 2006. Best Paper WG-17 Joint Campaign Analysis

FRANKE, MILTON E., [ENY]

Wierschke, K. E. (student), Franke, M. E. (advisor), Watts, R. (sponsor), and Ponnappan, R. (sponsor), "Heat Dissipation with Pitch Based Carbon Foams and Phase Change Materials," Paper No. AIAA-2005-5070, 38th AIAA Thermophysics Conference, Toronto, Ontario, Canada, 6-9 June 2005. The paper was awarded the outstanding student paper at the 2005 AIAA Thermophysics Conference. The award was presented in San Francisco at the AIAA 2006 Fluids Awards Banquet, June 2006.

HAVRILLA, MICHAEL J., [ENG]

Nominated to the HKN Honor Society, November 2005

HOLT, DANIEL T., Lt Col [ENV]

Sigma Iota Epsilon Management Professor of Year 2005-2006 (Sigma Beta Chapter of Sigma Iota Epsilon)

KUNZ, DONALD L., [ENY]

American Institute of Aeronautics and Astronautics Distinguished Service Award, 2000–2006

MILLS, ROBERT F.,

"Mathematical Framework for Measuring Effectiveness", *74th Military Operations Research Society (MORS) Symposium*, June 2006. Best Paper WG-17 Joint Campaign Analysis

NOVAK, KYLE A., Maj [ENC]

The University of Wisconsin – Madison's John Nohel Prize for Outstanding Thesis in Applied Mathematics, 2006

RUGGLES-WRENN, MARINA B., [ENY]

The American Ceramic Society, Certificate of Recognition and Appreciation, 2006

ASME International, Pressure Vessel and Piping Division, Certificate of Appreciation, 2006

TERZUOLI, ANDREW J., Jr [ENG]

IEEE certificate of appreciation, MTT society

THOMAS, M. U., [ENS]

Thomas, Marlin U., IIE Division 2nd Place Best Paper Award, June 2006 for publication: "Homeland Security and the IE Curriculum," 2005 ASEE Annual Conference Proceedings, Portland, OR, June 15, 2005

VARGAS, PAMELA A.,

Distinguished Service Award from Region IV of the National Council of University Research Administrators, May 2006.

WEIR, JEFFERY D., LT COL

"Mathematical Framework for Measuring Effectiveness", *74th Military Operations Research Society (MORS) Symposium, June 2006.* Best Paper WG-17 Joint Campaign Analysis.

2.3.2 STUDENTS

AMT, JOHN H.

Best paper in session: Amt J. and J. Raquet, "Positioning for Range-Based Land Navigation Systems Using Surface Topography," *Proceedings of ION GNSS-2006*, Fort Worth, TX, Sep 2006.

ARMSTRONG, PATRICK D., Capt

AFIT Graduate School Dean's Award Winner from the Department of Systems and Engineering Management, March 2006.

BAIZERT, PIOTR, Flt Lt

Measurement and Signature Intelligence Association Outstanding Student Award, March 2006

BULLOCK, RICHARD K., Maj

"Mathematical Framework for Measuring Effectiveness," *74th Annual Military Operations Research Society Symposium (MORS)*, Air Force Academy, Jun 2006 (won the Best Paper award)

BULSON, CHRISTOPHER D. 1LT

Offic of the Air Force Civil Engineer, George K Dimitroff Award, March 2006.

DENNINGHOFF, DANIEL J., Capt

AFIT Graduate School Dean's Award Winner from the Department of Electrical and Computer Engineering, March 2006.

ELLIS, MARC D., Capt

Society of Cost Estimating and Analysis Thesis Award, March 2006

FRASER, NICHOLAS A., Capt

Louis F. Polk Outstanding Research Award, March 2006.

Association of Old Crow Information Operations Outstanding Research Award, March 2006

GORDON, RANDEL J., Capt

Society of Experimental Test Pilots symposium, Best Presentation: "Manned Sailplane Dynamic Soaring". Results to be featured in a National Geographic special in January 2007.

HAMILL, JONATHAN T., Maj

"Information Operations," *74th Annual Military Operations Research Society Symposium (MORS)*, Air Force Academy, Jun 2006 (Best Paper WG-8 Information Operations/Information Warfare)

HINSHAW, HUYNH A., Capt

AFIT Graduate School Dean's Award Winner from the Department of Operational Sciences, March 2006.

KIRK, TIMOTHY R., Maj; MCCRAINE, RODNEY E., Maj; UDOAKA, UDUAK I., Maj; WOOD, CAROLYN L., Maj

Winner of the Department of State (DOS) national case study competition that analyzed three major issues faced by DOS in posting Foreign Service officers to Nigeria. Other teams included Ohio State University, University of Wisconsin-Madison, Georgetown, Emory, Rice, and University of California-Berkeley

LEMANSKY, CHRISTOPHER D., Maj

Armed Forces Communications-Electronics Association's C4I Research Excellence Award, March 2006.

MARINO, JASON E., Capt

Association of Old Crows Electronic Defense Outstanding Research Award, March 2006.

MCLAMB, WILBURN B., Capt

Military Operations Research Society (MORS) Award, March 2006.

MIKULCIK, JOY D., Capt

Air Force Historical Foundation Thesis Award, March 2006.

MIXON, DUSTIN G., 1LT

AFIT Graduate School Dean's Award Winner from the Department of Mathematics and Statistics, March 2006.

MORRIS, KEVIN M., 2LT

Best Student Paper at the *IEEE International Conference on Networking, Sensing and Control* (ICNSC 2006), Ft. Lauderdale, FL, April 2006.

OVERHOLTS, DALE L. II, Capt

International Society of Logistics Jerome G. Peppers, Jr., Outstanding Student Award, March 2006.

ROSS, STEVEN M., Capt

AFIT Graduate School Commandant's Award for Most Exceptional Thesis, March 2006.

American Institute of Aeronautics and Astronautics Graduate Student Award for Research Excellence, March 2006.

Institute of Navigation's Research Excellence Award, March 2006.

SCHROEDER, NEIL J., Capt

Armed Forces Communications-Electronics Associations Information Resource Management Award, March 2006.

SHERIDAN, JAMES D., Maj

International Society of Logistics Jerome G. Peppers, Jr., Outstanding Student Award, March 2006.

SMETEK, TIMOTHY E., Maj

Best Paper Award: "Air Power and Combat Identification," *74th Annual Military Operations Research Society Symposium (MORS)*, Air Force Academy, Jun 2006

SUAREZ, TROY A., Capt

Project Management Institute Thesis Award, March 2006.

TUREK, NADJA F., Capt

Best Poster in the Area of Drinking Water Quality: "Investigation of Copper Contamination and Corrosion Scale Mineralogy in Aging Drinking Water Distribution Systems," American Water Works Association 2006 Annual Conference and Exposition, San Antonio, TX, 11-15 June 2006

UZPEN, SHELLY A., Capt

Measurement and Signature Intelligence Committee Outstanding Thesis Award, March 2006.

WAITE, RALPH J., Maj [ENS]

Military Operations Research Society (MORS) Award, June 2006.

WILLIFORD, RUSSELL S., Capt

American Nuclear Society Thesis Award, March 2006.

AFIT Graduate School Dean's Award Winner from the Department of Engineering Physics, March 2006.

3. RESEARCH STATISTICS

3.1 RESEARCH ASSESSMENT QUESTIONNAIRE RESULTS

An AFIT Research Assessment Questionnaire, shown on the following page, was sent to each sponsor of a Master's thesis and doctoral dissertation project during FY 2006 to determine the project's contribution, significance and cost avoidance. Detailed results of the questions asked are shown in Table 3.1. The data in this table are based on 73 questionnaires returned out of the 292 questionaires mailed.

Table 3.1: Sponsor Assessment of AFIT Research

QUESTION	EN
Did this research contribute to a current Air Force/DoD project? (Yes answers)	100%
The thesis work was:	
Highly significant	38%
Significant	48%
Slightly significant	13%
Not significant	1%
Average man-years of effort saved by the sponsors.	.92
Average cost avoided per thesis/dissertation by the sponsors.	$135,871
Total cost avoided for all theses and dissertations sponsored (estimated).	$35 M
Rank of respondents	
Colonel (DR IV/GM-15)	25%
Lt Col (DR-III/GM-14)	40%
Major (DR-II/GM-13)	16%
Captain (DR-I/GS-12)	4%
Other	15%

RESEARCH ASSESSMENT QUESTIONNAIRE

TO:

Thank you for sponsoring the AFIT thesis or dissertation listed below. AFIT is working hard to keep its research focused on defense technologies of interest to the Air Force and to the nation.

Title:

Student Author: Designator:

Faculty Advisor:

Date of Graduation:

Please help us determine the value and contribution of this research to your organization's mission by answering the questions below:

1. Did this research contribute to a current task or goal of interest to your organization? Y / N
2. Would you have completed this work if AFIT had not done it? Y / N
3. Regardless of your answers above, how would you rate this work?
   Highly significant
   Significant
   Slightly significant
   No significance
4. If AFIT had not done this work, please estimate what it would have cost your organization to perform it, either by using in-house resources or by contract. *Man-Years ____ $_____

   **Please note that typically an MS thesis requires 0.5MY of the student's time and one month of the faculty advisor's time. For a PhD dissertation the numbers are 2MY for the student and 4 months for the advisor.*

5. Would you like to make any remarks? (These will be shared with the academic department and the faculty chairperson.) (If necessary, please continue on reverse side.)

You may mail this to AFIT/ENR, 2950 Hobson Way, Wright-Patterson AFB OH 45433-7765, or fax it to 937-656-7139 (DSN 986-7139), or just e-mail your answers (only) to 1 to 5 to research@afit.edu
If you use e-mail, please include the designator above so that we might identify the project.

Thank you.

_____ _____
Name of Evaluator Office Symbol

_____
Grade/Rank of Evaluator

3.2 RESEARCH AND CONSULTING OUTPUT MEASURES

There are measurable indicators of AFIT's contribution to the engineering and scientific community and AFIT's success in staying well informed of technical possibilities and scientific opportunities. These indicators include the number and quality of technical publications accepted by the editors of journals; the number of presentations accepted for regional, national and international conferences; the number of research projects conducted; the number of consultations performed for Air Force and DoD customers; and finally, the number of student graduate research papers, MS theses, and PhD dissertations completed and submitted to the Defense Technical Information Center. For FY06, these output measures are shown in Table 3.2.

Table 3.2: Faculty Research and Sponsored Programs Output by Graduate School Department

		Graduate School by Department					
	Graduate School (EN) Total	Math & Stats (ENC)	Electrical & Comp Eng (ENG)	Engineering Physics (ENP)	Operational Sciences (ENS)	Sys & Eng Management (ENV)	Aeronautics & Astro (ENY)
Number of Faculty (FTE)*	136	15	34	21	22	20	24
Refereed Publications	124	10	51	20	18	13	35
Other Publications	208	17	112	16	11	5	47
Presentations	340	19	131	75	41	21	53
Sponsor Funded Projects	159	6	49	29	17	3	55
Substantial Consultations	39	2	5	17	12	1	2
Books	1	0	0	0	1	0	0
Chapters of Books	11	0	7	0	0	2	2
Patents	2	0	2	0	0	0	0
Doctoral Dissertations Advised	21	0	8	3	4	0	6
Master's Theses Advised	339	6	98	31	40	55	109
Graduate Research Papers Advised	80	14	8	1	57	0	0

*FTE: Full-time equivalent

3.3 RESEARCH AND CONSULTING SPONSORSHIP

As part of an Air Force institution, the faculty members of the Air Force Institute of Technology focus their research on current problems as well as future systems of the Air Force and other DoD organizations. Evidence of this focus is that 78% of technical, and 73% of all theses and dissertations listed in Table 3.2 are externally sponsored by Air Force, DoD and Government agencies. In addition, most of the research projects and consultations are carried out for Air Force and DoD units. The data are summarized in Table 3.3 and Figure 3.1.

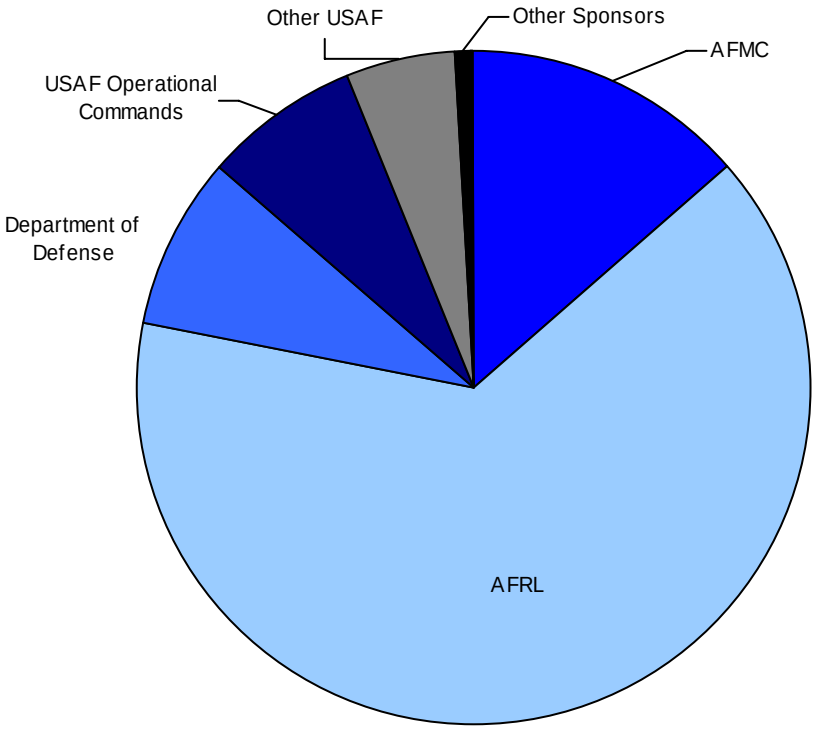


Figure 3.1: Sponsors of AFIT Theses and Dissertations

Table 3.3: AFIT External Sponsorhip by Organization

SPONSOR ORGANIZATION	PhD Dissertations	Master's Theses	Graduate Research Papers	Funded Projects	Substantial Consultations
HQ UNITED STATES AIR FORCE	1	3	10	6	
OFFICE OF THE SECRETARY OF THE AIR FORCE		3	1	7	
AIR EDUCATION AND TRAINING COMMAND			1	1	
AIR COMBAT COMMAND		3			
National Air and Space Intelligence Center	2	6		4	4
AIR FORCE MATERIEL COMMAND		17	11	1	1
Aeronautical Systems Center		4	3		1
Air Force Flight Test Center		2			1
Air Force Research Laboratory (AFRL)		1		1	
Air Force Office of Scientific Research (AFOSR)	5	19		33	4
Air Vehicles Directorate (VA)	4	20	1	21	2
Directed Energy Directorate (DE)	3	5		6	
Human Effectiveness Directorate (HE)	1	4		1	
Information Directorate (IF)	1	11	2	5	
Materials & Manufacturing Directorate (ML)		15		4	2
Munitions Directorate (MN)	1	8		8	2
Propulsion Directorate (PR)		16		9	2
Sensors Directorate (SN)	3	43		20	2
Space Vehicles Directorate (VS)		5	1	3	
Electronic Systems Center				1	
AIR FORCE SPACE COMMAND		2			
AIR MOBILITY COMMAND		2	6		
US AIR FORCE ACADEMY		2			
US AIR FORCE OPERATING AGENCIES					
Air Force Center for Environmental Excellence		3			
Air Force Civil Engineer Support Agency		2			
Air Force Communications Agency		3		1	1
Air Force Cost Analysis Agency		2			
Air Force Expeditionary Force Center		1			
Air Force Institute for Occupational Health		2			
Air Force Technical Application Center		1		2	3
Air Force Weather Agency		3			
DEPARTMENT OF DEFENSE		2		5	3
Defense Threat Reduction Agency		2		1	
National Security Agency		7		6	1
National Defense University		1			
US Office of Secretary Defense		1			2
US Joint Forces Command		1	1		1
US Strategic Command			1		
US Transportation Command			8		1
United States Army		4		3	
United States Marine Corps		1			
United States Navy		1		2	
DEPARTMENT OF ENERGY		1		3	1
NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY				2	2
NATIONAL SCIENCE FOUNDATION				3	
NON-FEDERAL ORGANIZATIONS					
Boeing		1			
Good Samaritan Hospital				1	
TOTALS	**20***	**228***	**46**	**159**	**36**

*Multiple Sponsors

See Appendix C for Selected Acronym List and Organization Name Changes

3.4 OUTSIDE FUNDING FOR THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT

Many of the Graduate School of Engineering and Management's theses and research projects completed under faculty supervision (sponsored or unsponsored) are funded in part by other Air Force, DoD and government units and agencies. Often, this funding results from collaboration between faculty and thesis sponsors and occurs when the research project can be leveraged by the purchase of equipment or services not otherwise available. Tables 3.4 and 3.5, and Figure 3.3, summarize outside funding for FY06, and Figure 3.2 summarizes the past seven fiscal years of outside sponsored funding.

Table 3.4 New FY06 Awards to Academic Departments & Research Centers by Type

	Research		*Education*		*Total*	
Department	*#*	*Dollars*	*#*	*Dollars*	*#*	*Dollars*
Mathematics & Statistics (ENC)	6	102,345	-	-	6	102,345
Electrical & Computer Eng (ENG)	49	2,716,614	2	401,469	51	3,118,083
Engineering Physics (ENP)	29	1,842,940	5	915,875	34	2,758,815
Research & Sponsored Programs (ENR)	1	9,800	-	-	1	9,800
Operations Sciences (ENS)	17	751,821	-	-	17	751,821
Systems & Eng Management (ENV)	3	136,540	-	-	3	136,540
Aeronautical & Astronautical Eng (ENY)	55	960,827	1	15,391	56	976,218
TOTAL	**160**	**6,520,887***	**8**	**1,332,735**	**168**	**7,853,622**
Research Center**	*#*	*Dollars*	*#*	*Dollars*	*#*	*Dollars*
Advanced Navigation Technology Center (ANT)	20	1,017,127	-	-	20	1,017,127
Center for Directed Energy (CDE)	18	1,426,353	2	65,875	20	1,492,228
Center for Info Security Edu & Research (CISER)	9	915,658	2	401,469	11	1,317,127
Center for MASINT Studies and Research (CMSR)	-	-	3	850,000	3	850,000
Center for Operational Analysis (COA)	13	655,310	-	-	13	655,310
Center for Systems Engineering (CSE)	-	-	-	-	-	-
Center for Space Studies & Research (CSSR)	-	-	-	-	-	-
TOTAL	**60**	**4,014,448**	**7**	**1,317,344**	**67**	**5,331,792**

* DoD regulations limit AFIT's charges to DoD organizations. Accounting for these nonchargeable items, the cost of our research program at a comparable civilian universsity would have been approximately $15 million

** All Center funds are also included in departmental funding

Figure 3.2: New Award History FY00-FY06

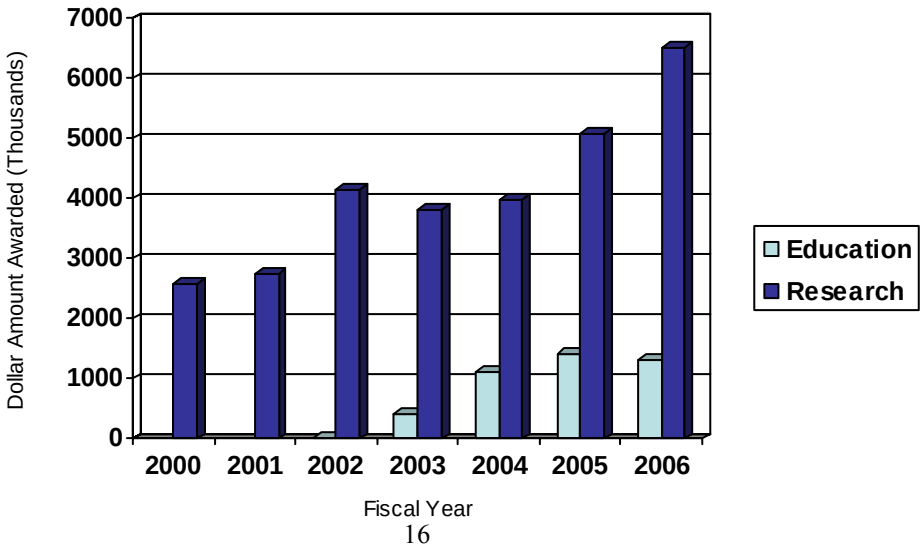
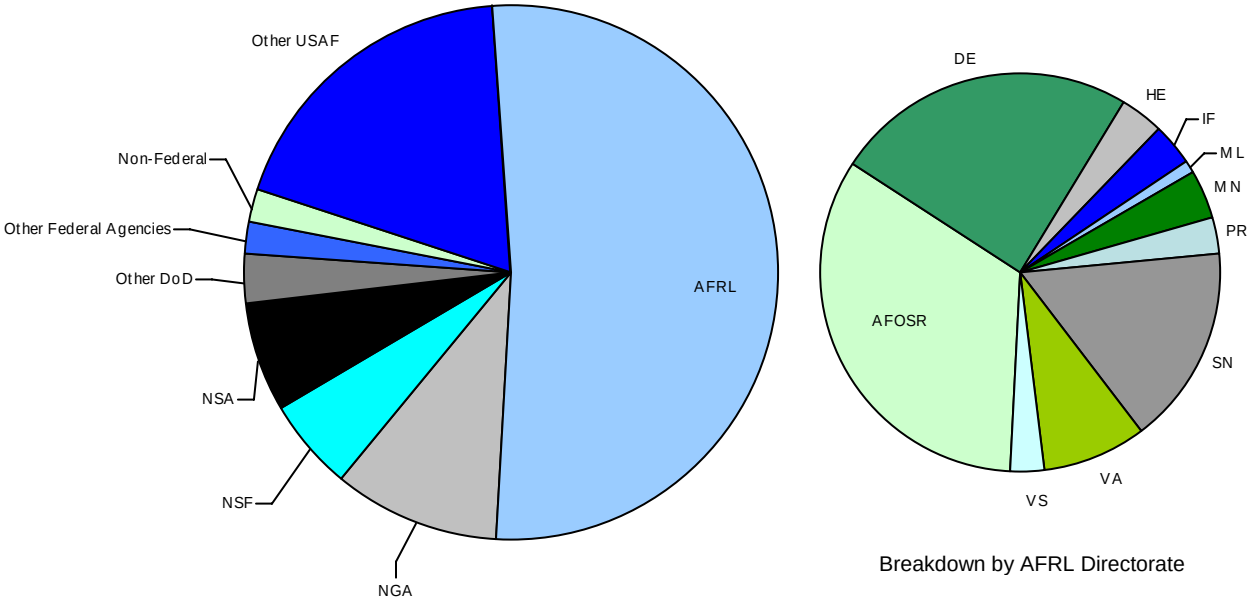


Figure 3.3: Sponsors of FY06 Funded Projects



Breakdown by AFRL Directorate

Table 3.5 New FY06 Awards to Academic Departments & Research Centers by Sponsor

	AFRL	*NGA*	*NSF*	*NSA*	*Other Federal*	*Other USAF*	*Other DoD*	*Non-Federal*	*Total*
Dept.	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
ENC	35,000	-	-	-	36,786	-	-	30,559	102,345
ENG	1,632,345	-	427,976	496,963	-	388,689	130,000	42,110	3,118,083
ENP	1,305,940	750,000	-	-	90,000	532,000	45,000	35,875	2,758,815
ENR	9,800	-	-	-	-	-	-	-	9,800
ENS	376,424	-	-	10,000	33,000	330,550	-	1,847	751,821
ENV	111,540	-	-	-	-	-	25,000	-	136,540
ENY	741,119	-	-	-	-	183,364	23,561	28,174	976,218
TOTAL	**4,212,168**	**750,000**	**427,976**	**506,963**	**159,786**	**1,434,603**	**223,561**	**138,565**	**7,853,622**
Research Center*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
ANT	762,064	-	-	-	-	165,063	90,000	-	1,017,127
CDE	1,125,353	-	-	-	-	296,000	35,000	35,875	1,492,228
CISER	328,188	-	427,976	496,963	-	64,000	-	-	1,317,127
CMSR	-	750,000	-	-	-	100,000	-	-	850,000
COA	337,310	-	-	10,000	33,000	275,000	-	-	655,310
CSE	-	-	-	-	-	-	-	-	-
CSSR	-	-	-	-	-	-	-	-	-
TOTAL	**2,552,915**	**750,000**	**427,976**	**506,963**	**33,000**	**900,063**	**125,000**	**35,875**	**5,331,792**

*All Center funds are also included in departmental funding

4. SPONSORSHIP OF STUDENT RESEARCH

4.1 DOCTORAL DISSERTATIONS

[*Denotes Multiple Sponsors]

4.1.1 HQ UNITED STATES AIR FORCE

BULLOCK, RICHARD K. *Theory of Effectiveness Measurement.* AFIT/DS/ENS/06-01, Faculty Advisor: Dr. Richard F. Deckro. Sponsor: HQ USAF/A9.

4.1.2 AIR COMBAT COMMAND

NATIONAL AIR AND SPACE INTELLIGENCE CENTER

*HAMILL, JONATHAN T. *Analysis of Layered Social Networks.* AFIT/DS/ENS/06-03, Faculty Advisor: Dr. Richard F. Deckro. Sponsor: AFRL/HECS and NASIC/FCEB.

HAWKS, MICHAEL R. *Passive Ranging Using Atmospheric Oxygen Absorption Spectra.* AFIT/DS/ENP/06-02, Faculty Advisor: Dr. Glen P. Perram. Sponsor: NASIC/DEM.

4.1.3 AIR EDUCATION AND TRAINING COMMAND

AIR FORCE INSTITUTE OF TECHNOLOGY

**Although no external sponsor is identified, in most cases, AFIT faculty sponsored the below projects due to their relevance to current or future USAF, DoD and/or Homeland Security requirements.

PHILLIPS, GRADY T. *Spatially-Resolved Temperature Diagnostic for Supersonic Flow Using Cross-Beam Doppler-Limited Laser Saturation Spectroscopy.* AFIT/DS/ENP/06-03 Faculty Advisor: Dr. Glen P. Perram. Sponsor: N/A

VOGEL, KURT A. *Dynamic and Control of Tethered Satellite Formations for the Purpose of Space-Based Remote Sensing.* AFIT/DS/ENY/06-04, Faculty Advisor: Dr. Richard G. Cobb. Sponsor: N/A.

4.1.4 AIR FORCE RESEARCH LABORATORY

AFRL: AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

BURKS, ROBERT E. *An Adaptive Tabu Search Heuristic for the Location Routing Pickup and Delivery Problem with Time Windows with a Theater Distribution Application.* AFIT/DS/ENS/06-02, Faculty Advisor: Dr. James T. Moore. Sponsor: AFRL/AFOSR/NM.

CINNAMON, JOHN D. *Analysis and Simulation of Hypervelocity Gouging Impacts.* AFIT/DS/ENY/06-01, Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/AFOSR/NM.

MARTIN, LINDSEY F. *Assessing the Potential for Improved Scramjet Performance Through Application of Electromagnetic Flow Control.* AFIT/DS/ENY/06-05, Faculty Advisor: Maj Richard J. McMullan. Sponsor: AFRL/AFOSR/NA.

SHEPHERD, MICHAEL J. *Lightweight In-Plane Actuated Deformable Mirrors for Space Telescopes.* AFIT/DS/ENY/06-03, Faculty Advisor: Dr. Richard Cobb. Sponsor: AFRL/AFOSR.

SHERMAN, NATHAN P. *Analysis and Control of Unreliable, Single-Server Retrial Queues with Infinite-Capacity Orbit and Normal Queue.* AFIT/DS/ENS/06-05, Faculty Advisor: Dr. Jeffery Kharoufeh. Sponsor: AFRL/AFOSR.

AFRL: AIR VEHICLES DIRECTORATE

BLAKE, TRAVIS F. *Reconstructing Spectral Scenes using Statistical Estimation to Enhance Space Situational Awareness.* AFIT/DS/ENG/06-05, Faculty Advisor: Lt Col Matthew E. Goda. Sponsor: AFRL/VA.

PARKER, DAVID R. *Uncertainty Estimation for Target Detection System Discrimination and Confidence Performance Metrics.* AFIT/DS/ENY/06-01, Faculty Advisor: Dr. Steven C. Gustafson. Sponsor: AFRL/VASD.

PARKER, GREGORY H. *Dynamic Aeroelastic Analysis of Wing/Store Configurations.* AFIT/DS/ENY/06-06, Faculty Advisor: Lt Col Raymond Maple. Sponsor: AFRL/VASD.

ROELKE, GEORGE R. *Fault and Defect Tolerant Computer Architectures: Reliable Computing with Unreliable Devices.* AFIT/DS/ENG/06-07, Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/VA.

AFRL: DIRECTED ENERGY DIRECTORATE

CRABTREE, PETER N. *Performance-Metric Driven Atmospheric Compensation for Robust Free-Space Laser Communication.* AFIT/DS/ENG/06-03, Faculty Advisor: Lt Col Matthew E. Goda. Sponsor: AFRL/DES.

GRIMES, BRENT W. *Multiple Channel Laser Beam Combination and Phasing Using Stimulated Brillouin Scattering in Optical Fibers.* AFIT/DS/ENP/06-01, Faculty Advisor: Dr. Won Roh. Sponsor: AFRL/DELO.

SCHULTHESS, MARCUS R. *Modeling and Optimal Estimation of Atmospherically Induced Pointing Error.* AFIT/DS/ENG/06-08, Faculty Advisor: Lt Col Matthew E. Goda. Sponsor: AFRL/DE.

AFRL: HUMAN EFFECTIVENESS DIRECTORATE

*HAMILL, JONATHAN T. *Analysis of Layered Social Networks.* AFIT/DS/ENS/06-03, Faculty Advisor: Dr. Richard F. Deckro. Sponsor: AFRL/HECS and NASIC/FCEB

AFRL: INFORMATION DIRECTORATE

*ROBERTS, MARCUS L. *A General Framework for Analyzing, Characterizing, and Implementing Spectrally Modulated, Spectrally Encoded Signals.* AFIT/DS/ENG/06-06, Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/SNRW and AFRL/IFGD.

AFRL: MUNITIONS DIRECTORATE

VETH, MICHAEL J. *Fusion of Imaging and Inertial Sensors for Navigation.* AFIT/DS/ENG/06-09, Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/MN.

AFRL: SENSORS DIRECTORATE

CORBELL, PHILLIP M. *Adaptive Illumination Patterns for Radar Applications.* AFIT/DS/ENG/06-01, Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/SNHE

MACDONALD, ADAM. *Blind Deconvolution of Anisoplanatic Images Collected by a Partially Coherent Imaging System.* AFIT/DS/ENG/06-04, Faculty Advisor: Dr. Stephen C. Cain. Sponsor: AFRL/SNJ.

*ROBERTS, MARCUS L. *A General Framework for Analyzing, Characterizing, and Implementing Spectrally Modulated, Spectrally Encoded Signals.* AFIT/DS/ENG/06-06, Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/SNRW and AFRL/IFGD.

4.2 MASTER'S THESES
[*Denotes Multiple Sponsors]

4.2.1 HQ UNITED STATES AIR FORCE

CORRIGAN, ROBERT M. *Contemplating a New Model for Aerospace Medical Technician Skills Sustainment Training.* AFIT/GIR/ENV/06M-04, Faculty Advisor: Maj Carolyn Macola. Sponsor: HQ USAF/SGCN.

McCRAIN, RODNEY E. *Factors Affecting the Transfer of Basic Combat Skills Training in the Air Force.* AFIT/GLM/ENS/06-09, Faculty Advisor: Maj Kirk Patterson. Sponsor: HQ USAF/A4R.

ROMANO, DANIEL M. *An Asymmetrical Look at Air Force Human Capital Management: More Emphasis on Qualifications and Less on Rank.* AFIT/GLM/ENV/06-07, Faculty Advisor: Maj Carolyn Macola. Sponsor: HQ USAF/A1PFE.

4.2.2 SECRETARY OF THE AIR FORCE

ALBERT, ALAN P., EFSTATHIOS ANTONIOU, DERRICK W. BREWER, STEPHEN D. LEGGIERO, THOMAS I. SAVOIE, MARY R. TEETER, KIMBERLY A. TOOMAN, and RAMON L. VEGLIO. *A Systems Engineering Approach to Integrated Structural Health Monitoring For Again Aircraft.* AFIT/GSE/ENY/06-M02, Faculty Advisor: Dr. Som Soni. Sponsor: SAF/IARL.

FLORY, JOHN A. Optimizing Mean Mission Duration for Multiple-Payload Satellites. AFIT/GOR/ENS/06-08, Faculty Advisor: Dr. Jeffrey Kharoufeh. Sponsor: SAF/FMBMB.

RUCKER, JEFFREY E. Using *Agent-Based Modeling to Search for Elusive Hiding Targets.* AFIT/GOR/ENS/06-16, Faculty Advisor: Dr. John O Miller. Sponsor: SAF/XCOM.

4.2.3 AIR COMBAT COMMAND

*ALLEN, WALTER C. *An Analysis of the Lateral Stability of the Joint Surveillance Target Attack Radar System (E-8C).* AFIT/GAE/ENY/06-01, Faculty Advisor: Dr. Mark F. Reeder. Sponsor: ACC/OL-0011 E8SG JTF/EN, ACC/E8SG/NG, and ACC/330 CTS.

LEE, SANG H. *Investigation of the Effects of Target Feature Variations Ballistic Missile RCS.* AFIT/GE/ENG/06-34, Faculty Advisor: Lt Col James Fellows. Sponsor: ACC.

OVERHOLTS, DALE L. II, *Improving Inter-continental Ballistic Missile Maintenance Scheduling through the Use of Location Analysis Methodologies*. AFIT/GLM/ENS/06-010, Faculty Advisor: Maj John Bell. Sponsor: ACC/20 AF/A4.

WAGONER, DONALD J. *Predicting the Effects of Contingency Contracting on Local Economics.* AFIT/GLM/ENV/06-03, Faculty Advisor: Dr. Michael Hicks. Sponsor: ACC/USCENTAF/A4.

NATIONAL AIR AND SPACE INTELLIGENCE CENTER

BOND, REED M., DAVID T. CAPONIO, LAWERENCE B. CHILDERS, DONALD J. DAVIS, JOHN V. FONTEJON, KENNETH R. KRANZ, and MICAH K. MOSSMAN. *Project INSIGHT: Threat Modeling and Analysis for Earth-Orbiting Satellites.* AFIT/GSE/ENY/06-M03, Faculty Advisor: Dr. Richard Cobb. Sponsor: NASIC/SMSV.

*DOWNS, DONEDA D. *Evaluating the Commitment of Clandestine Group Members*. AFIT/GOR/ENS/06-06, Faculty Advisor: Dr. Richard Deckro. Sponsor: AFRL/HECS & NASIC/FC.

LASH, PAUL C. *Comparison of Computational Electromagnetic Codes for Prediction of Low-Frequency Radar Cross Section.* AFIT/GE/ENG/06-32, Faculty Advisor: Dr. Michael Havrilla. Sponsor: NASIC/ADNS.

POWERS, KELLY S. *Parameter Estimation of a Tactical Missile using Linear Regression.* AFIT/GAE/ENY/06-S12, Faculty Advisor: Dr. David R. Jacques. Sponsor: NASIC/ADNW.

STEWART, BRYAN J. *Reproductability, Distinguishability, and Correlation of Fireball and Shockwave Dynamics in Explosive Munitions Detonations.* AFIT/GAP/ENP/06-19, Faculty Advisor: Dr. Glen Perram. Sponsor: NASIC/DEMI.

WARREN, TREVOR W. *Characterization of Detonation Phenomena Observed in High-Speed, Visible Imagery.* AFIT/GAP/ENP/06-20, Faculty Advisor: Dr. Glen Perram. Sponsor: NASIC/DEMI.

4.2.4 AIR EDUCATION AND TRAINING COMMAND

AIR FORCE INSTITUTE OF TECHNOLOGY

**Although no external sponsor is identified, in most cases, AFIT faculty sponsored the below projects due to their relevance to current or future USAF, DoD and/or Homeland Security requirements.

ABEYGOONEWARDENE, JEEVANI I. S*caling Flight Tests of Unmanned Air Vehicles.* AFIT/GAE/ENY/06-S01, Faculty Advisor: Dr. David R. Jacques. Sponsor: N/A.

ALHARBI, MOHAMMED A. *Fast Video Stabilization Algorithms.* AFIT/GCS/ENG/06-02, Faculty Advisor: Dr. Guna Seetharaman. Sponsor: N/A.

ANASTASIOU, ALEXANDER B. *Modeling Urban Warfare: Joint Semi-Automated Forces in Urban Resolve.* AFIT/GOR/ENS/06-01, Faculty Advisor: Dr. John O. Miller. Sponsor: N/A.

BANG, SUNG WAN. *Coalition Modeling in Humanitarian Assistance Operations.* AFIT/GOR/ENS/06-02, Faculty Advisor: Dr. Richard Deckro. Sponsor: N/A.

BANKS, DAWN L. *Relationships Between Organizational Commitment, Core Job and Organizational Citizenship Behaviors in United States Air Force Organizations.* AFIT/GLM/ENS/06-01, Faculty Advisor: Maj John Bell. Sponsor: N/A.

BELL, GARRICK A. *An Interactive Relaxation Approach for Anomaly Detection and Preventive Measures in Computer Networks.* AFIT/GCE/ENG/06-01, Faculty Advisor: Dr. Guna Seetharaman. Sponsor: N/A.

BELTON, SCOTT L. *The Simulation of Off-Axis Laser Propagation Using HELEEOS.* AFIT/GSS/ENP/06-01, Faculty Advisor: Lt Col Steven Fiorino. Sponsor: N/A.

BENTLY, RICHARD S. *Usability and Accessibility of Air Force Intranet Web Sites.* AFIT/GIR/ENV/06M-02, Faculty Advisor: Dr. Kevin L. Elder. Sponsor: N/A.

BENTSON, KJIRSTIN A. *An Epidemiological Approach to Terrorism.* AFIT/GOR/ENS/06-03, Faculty Advisor: Dr. Stephen Baumert. Sponsor: N/A.

BERNAL, PHIL ANDREW L. *Forecasting Mental Health Care Cost for OIF and OEF Veterans.* AFIT/GCA/ENV/06J-01, Faculty Advisor: Maj Jeffrey Smith. Sponsor: N/A.

BOOHER, TIMOTHY B. *Optimal Periodic Inspection of a Stochastically Degrading System.* AFIT/GOR/ENS/06-04, Faculty Advisor: Dr. Jeffrey Kharoufeh. Sponsor: N/A.

BOOKER, PATRICK L. *A Comparative Assessment of Knowledge Management Programs Across the United States Armed Services.* AFIT/GIR/ENV/06M-03, Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: N/A.

BROUSSARD, COREY M. *New Tracing Filter Algorithm Using Input Parameter Estimation.* AFIT/GA/ENG/06-01, Faculty Advisor: Dr. Meir Pachter. Sponsor: N/A.

BROWN, SILAS J. *Applying Data Mining Techniques to Dynamically Model the ELINT Enterprise.* AFIT/GCS/ENG/06-01, Faculty Advisor: Dr. Henry Potoczny. Sponsor: N/A.

BURKE, KENNETH W. *Building a Consensus Forecast for Crude Oil Prices.* AFIT/GLM/ENV/06-00, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

BUTTS, JONATHAN W. *Formal Mitigation Strategies for the Insider Threat: A Security Model and Risk Analysis Framework.* AFIT /GE/ENG/06-57, Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

CARBAJAL, JENNIFER M. *Influence of Organizational Culture on the Relationship between Psychological Contracts and Organizational Citizenship Behavior.* AFIT/GRD/ENV/06M-01, Faculty Advisor: Dr. Michael Rehg. Sponsor: N/A.

CARDEN, ROBERT D. *A Market Response to DoD Contact Delay.* AFIT/GRD/ENV/06M-02, Faculty Advisor; Maj Sonia E. Leach. Sponsor: N/A.

CHARLES, CHRISTOPHER S. *Computational Modeling of the Dielectric Barrier Discharge (DBD) Device for Aeronautical Applications.* AFIT/GAP/ENP/06-02, Faculty Advisor: Dr. William F. Bailey. Sponsor: N/A.

CHRISTENSEN, NIEL E. *Hazardous Material Cargo Frustration at Military Aerial Ports of Embarkation.* AFIT/GLM/ENS/06-02, Faculty Advisor: Maj John Bell. Sponsor: N/A.

CLARK, JEFFERY D. *Characteristics of Two-Dimensional Triangular and Three-Dimensional Face-Centered-Cubic Photonic Crystals.* AFIT/GEO/ENP/06-01, Faculty Advisor: Dr. Michael Marciniak. Sponsor: N/A.

CLAUSON, MILTON J. *Analysis of Bacterial Population and Distribution in the Developing Strata of a Constructed Wetland Used for Chlorinated Ethene Bioremediation.* AFIT/GES/ENV/06M-02, Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: N/A.

CODRINGTON, KEVIN W. *Cost as an Independent Variable: A Study of its Continued Use by Aeronautical Systems Center's Programs and their Contractors to set and Maintain Cost Objectives.* AFIT/GRD/ENV/06M-03, Faculty Advisor: Lt Col Ross McNutt. Sponsor: N/A.

CONE, WILLIAM D. *Improving Maintenance Data Collection Via Point-of-Maintenance (POMX) Implementation.* AFIT/GLM/ENS/06-03, Faculty Advisor: Maj John Bell. Sponsor: N/A.

COOK, JASON J. *Estimating Required Contingency Funds for Construction Projects using Multiple Linear Regression.* AFIT/GEM/ENV/06M-02, Faculty Advisor: Lt Col Ellen England. Sponsor: N/A.

COOK, KENDRA L. *Characterizing the Impact of Precision Time and Range Measurements from Two-Way Time Transfer Systems on Network Differential GPS Position Solutions.* AFIT/GA/ENG/06-02, Faculty Advisor: Dr. John F. Raquet. Sponsor: N/A.

DAVIS, JUDY B. *The Impact of the Defense Industry Consolidation on the Aerospace Industry.* AFIT/GCA/ENV/06M-03, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

DIKE, CHRISTOPHER C. *A Wind Tunnel Investigation of Joined Wing Scissors Morphing.* AFIT/GAE/ENY/06-J02, Faculty Advisor: Dr. Milton E. Franke. Sponsor: N/A.

DUGAN, JOSEPH M. *Situational Awareness and Synthetic Vision for Unmanned Aerial Vehicle Flight Testing.* AFIT/GAE/ENY/06-J03, Faculty Advisor: Maj Paul A. Blue. Sponsor: N/A.

ELLIS, MARC D. *A Hedonic Approach to Estimating Software Cost Using Ordinary least Squares Regression and Nominal Attribute Variables.* AFIT/GCA/ENV/06M-04, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

ESPY, WALTER E. *Technology Transition: Guidance Versus Practice.* AFIT/GRD/ENV/06M-04, Faculty Advisor: Maj Sonia E. Leach. Sponsor: N/A.

FRASER, NICHOLAS A. *Mitigating Distributed Denial of Service Attacks in an Anonymous Routing Environment: Client Puzzles and Tor.* AFIT/GCS/ENG/06-06, Faculty Advisor: Dr. Richard A. Raines. Sponsor: N/A.

GAMACHE, JOYCE A. *Review of the JCIDS and the NSSAP.* AFIT/GRD/ENS/06-01, Faculty Advisor: Dr. Stephan Brady. Sponsor: N/A.

GEITGEY, JASON W. *The Determination of Remaining Satellite Propelland Using Measured Moments of Inertia.* AFIT/GAE/ENY/06-J04, Faculty Advisor: Dr. Richard G. Cobb. Sponsor: N/A.

GOODWIN, JEREMY S. *Detailed Design of the Rigidizable Inflatable Get-Away-Special Experiment.* AFIT/GA/ENY/06-M05, Faculty Advisor: Dr. Richard G. Cobb. Sponsor: N/A.

GRAY, MICHAEL J. *The Effects of Ability Homophily on Individual Performance*. AFIT/GEM/ENV/06M-04, Faculty Advisor: Maj Kent Halverson. Sponsor: N/A.

GSTATTENBAUER, GREG J. *Cost Comparison of Expendable, Hybrid and Reusable Launch Vehicles.* AFIT/GSS/ENY/06-M06, Faculty Advisor: Dr. Milton E. Franke. Sponsor: N/A.

GUNN-GOLKIN, ANNA E. *Structural Analysis of the Rigidizable Inflatable Get-Away-Special.* AFIT/GAE/ENY/06-S01, Faculty Advisor: Dr. Richard G. Cobb. Sponsor: N/A.

HELMS, SARAH K. *Development and Testing of an Inflatable Rigidizable Space Structure Experiment.* AFIT/GA/ENY/06-M03, Faculty Advisor: Dr. Richard G. Cobb. Sponsor: N/A.

HERALD, JENNY O. *Buying a Better Air Force.* AFIT/GCA/ENV/06M-05, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

HILL, CHRISTOPHER A. *Theoretical Modeling of the Transient Effects of a Towline Using the Method Characteristics.* AFIT/GAE/ENY/06-J06, Faculty Advisor: Dr. Ralph A. Anthenien Jr. Sponsor: N/A.

HOBBS, EDWARD L. *Efficient and Accurate Computation of Elastic Cross Sections in the Single-Level Breit-Wigner Resonance Region.* AFIT/GNE/ENP/06-02, Faculty Advisor: Maj David W. Gerts. Sponsor: N/A.

HOLMES, LINDSEY M. *Estimating Aerodynamic Properties of an Unknown Re-entry Vehicle Using Least Squares Filtering.* AFIT/GA/ENY/06-M04, Faculty Advisor: Lt Col Kerry D. Hicks. Sponsor: N/A.

HUTCHINGS, MATTHEW B. *Indigenous Architecture for Expeditionary Installations.* AFIT/GEM/ENY/06M-06, Faculty Advisor: Lt Col Ellen England. Sponsor: N/A.

HUTZEL, JOHN R. *A Graph Theoretic Analysis of the Effects of Organizational Structure on Employee Social Networks.* AFIT/GRD/ENV/06M-07, Faculty Advisor: Dr. Dennis Strouble. Sponsor: N/A.

HYDE, MILO W. *Determining the Resistive Sheets Using Transmission Measurements.* AFIT/GE/ENG/06-24, Faculty Advisor: Dr Michael Havrilla. Sponsor: N/A.

IVEY, KENNETH M. *High Performance individuals and How They Manage Their Personal Knowledge for Decision-Making: An Exploratory Study of US Air Force Leaders.* AFIT/GIR/ENV/06M-07, Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: N/A.

JAMESON, ROBERT E. *Development and Validation of Reentry Simulation Using MATLAB.* AFIT/GSS/ENY/06-M08, Faculty Advisor: Lt Col Kerry D. Hicks. Sponsor: N/A.

JOHNSON, MELISSA R. *An Analysis of USAF Aircraft Noise and Hedonic Property Values.* AFIT/GEM/ENV/06M-07, Faculty Advisor: Maj Sonia Leach. Sponsor: N/A.

JUN, YAN. *Evaluation of Chlorinated Solvents Removal Efficiency Among Three Wetland Plant Species: A Mesocom Study*. AFIT/GEM/ENV/06M-18, Faculty Advisor: Dr. Charles Bleckmann. Sponsor: N/A.

KELLNER, MOSTYN O. *A Decision Model for Choosing Among Photovoltaic Technologies to Generate Electricity at Grid-Connected Air Force Facilities: A Value-Focused Approach*. AFIT/GEM/ENV/06M-08, Faculty Advisor: Lt Col Ellen England. Sponsor: N/A.

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4.2.9 USAF FIELD OPERATING AGENCIES

AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE

BULSON, CHRISTOPHER D. *Using Value-Focused Thinking to Evaluate the Practicality of Porous Pavement Parking Areas on Air Force Installations.* AFIT/GEM/ENV/06M-01, Faculty Advisor: Lt Col Ellen England. Sponsor: AFCEE/ICM.

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O'LEARY, STEPHEN T. *A Multi-Pass Construction Heuristic for the Aggregated Airlift Problem.* AFIT/GOR/ENS/06-15, Faculty Advisor: Dr. Gary Kinney. Sponsor: AEFC/CC.

4.2.10 DEPARTMENT OF DEFENSE

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KIM, WON S. *Determining Source and Shield/Scatter Geometry Using Spectra Collected from a Portable High Purity Germanium Detector.* AFIT/GNE/ENP/06-03, Faculty Advisor: Dr. Larry Burggraf. Sponsor: Defense Threat Reduction Agency.

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UNITED STATES MARINE CORPS

SCHROEDER, NEIL J. *Using Prospect Theory to Investigate Decision-Making Bias Within an Information Security Context.* AFIT/GIR/ENV/05D-01, Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: U.S. Marine Force, Atlantic.

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O'REILLY, KEVIN R. *Quantitative Object Reconstruction using ABEL Transform Tornography and Mixed Variable Optimization.* AFIT/GSS/ENC/06-01, Faculty Advisor: Lt Col Mark A. Abramson. Sponsor: Los Alamos National Laboratory.

4.2.12 NON-FEDERAL ORGANIZATIONS

FEHLEN, RONALD G. *Air Gap Error Compensation for Coaxial Transmission Line Methods of Electromagnetic Material Characterization.* AFIT/GE/ENG/06-20, Faculty Advisor: Dr. Michael Havrilla. Sponsor: The Boeing Co.

4.3 GRADUATE RESEARCH PAPERS

4.3.1 HQ UNITED STATES AIR FORCE

DERMER, JAMES B. *Hurricane Katrina: A Lesson in Disaster Preparedness.* AFIT/IMO/ENS/06E-04, Faculty Advisor: Dr. William Cunningham. Sponsor: USAF EOS/CC

FRYMIRE, MICHAEL B. *Analysis of Alternatives for the Joint Cargo Aircraft A Value Focused Thinking Approach.* AFIT/IOA/ENS/06-01, Faculty Advisor: Maj Shane Knighton. Sponsor: HQ USAF/A5XC-GM.

HEASTER, WILLIAM C. *Tanker Employment Evolution: Operation Desert Storm Through Operation Iraqi Freedom.* AFIT/IMO/ENS/06E-09, Faculty Advisor: Dr. James Moore. Sponsor: HQ USAF/A1M.

HIGGINBOTHAEM, DAVID and DOUGLAS WARNOCK, *Predicting Retention of USAF Critical Skills Officers.* AFIT/IOA/ENS/06-02, Faculty Advisor: Maj Robert Neher. Sponsor: HQ USAF/A1PF.

JOHNSON, ROGER F. *Accelerating the Transition from Mission Support Group Commander to Air Expeditionary Group Commander.* AFIT/IMO/ENS/06E-10, Faculty Advisor: Maj Kirk Patterson. Sponsor: HQ USAF AEFC/CC.

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MOSS, KENNETH E. *Aerial Prepositioning of War Material.* AFIT/IMO/ENS/06E-13, Faculty Advisor: Dr. Stephen Brady. Sponsor: HQ USAF OUSD/LPP.

WALKER, BRIAN P. *A Study of Air Force Forward Operating Locations from a Combatant Commander's Perspective.* AFIT/ILM/ENS/06-21, Faculty Advisor: Dr. James Moore. Sponsor: HQ USAF.

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4.3.3 AIR EDUCATION AND TRAINING COMMAND

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AIR FORCE INSTITUTE OF TECHNOLOGY

**Although no external sponsor is identified, in most cases, AFIT faculty sponsored the below projects due to their relevance to current or future USAF, DoD and/or Homeland Security requirements.

BASS, SAMUEL D. *The Challenges of Information Management in the Networked Battlespace: Unmanned Aircraft Systems, Raw Data and the Warfighter.* AFIT/IC4/ENG/06-01, Faculty Advisor: Dr. Guna Seetharaman. Sponsor: N/A.

BAUER, KURT P., II. *Using Remote Sensing for Nuclear Event Attribution.* AFIT/ILM/ENP/06-01, Faculty Advisor: Dr. James Petrosky. Sponsor: N/A.

CHACON, MARK A. *Course Curriculum Development of the Future Cyber Warrior.* AFIT/IC4/ENG/06-02, Faculty Advisor: Dr. Robert Mills. Sponsor: N/A.

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COLEMAN, TODD L. and JERRY C. STONECIPHER, *A Comparison of the Air Force Institute of Technology and Civilian Institutions Graduate Logistics Curricula.* AFIT/ILM/ENS/06-03, Faculty Advisor: Maj Kirk Patterson. Sponsor: N/A.

FINCH, MICHAEL J. *Applying Air Force Smart Operations for the 21st Century (AFSO21) to the Mobility Air Forces Tactics Development Process.* AFIT/IMO/ENS/06-06, Faculty Advisor: Dr. Alan Heminger. Sponsor: N/A.

GREENLEE, JOSEPH W. *Push vs. Pull Supply Distribution in the Stryker Brigade Combat Team.* AFIT/ILM/ENS/06-10, Faculty Advisor: Maj Shane Knighton. Sponsor: N/A.

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MONGEON, JACQUELINE M. see HETKE, DALE E.

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FELTER, KEITH N. *Application of Lean Principles to the C-130 Formal Training Unit.* AFIT/IMO/ENS/06E-05, Faculty Advisor: Dr. Alan Heminger. Sponsor: 314 AW and 314 OG.

KENT, GREG A. *Model of AWACS Programmed Flying Training.* AFIT/IOA/ENS/06-03, Faculty Advisor: Dr. Gary Kinney. Sponsor: 552 ACW.

LEVY, CHRISTOPHER P. *A Comparison Study of F-15C Fighter Squadron Ready Aircrew Program Flying Hour Scheduling vs. The Rand Corporations Flying Hour Scheduling Linear Program.* AFIT/IOA/ENS/06-04, Faculty Advisor: Lt Col Raymond Staats. Sponsor: 1 OSS/CC.

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WHITE, SAMUEL G., III. *Requirements for Common Bomber Mission Planning Environment.* AFIT/IC4/ENG/06-08, Faculty Advisor: Dr. Robert Mills. Sponsor: B2SG/VA.

AERONAUTICAL SYSTEMS CENTER

MARION, MARIA C. *Validation of Selected Sample Agent Rules in EAAGLES.* AFIT/IOA/ENS/06-05, Faculty Advisor: Dr. J.O. Miller. Sponsor: ASC/SIMAF.

*PERIS, WILLIAM E, and SANDY J. RICHARDSON. *F-22 Combined Test Force Options to Improve Flight Test Efficiency.* AFIT/IOA/ENS/06-09, Faculty Advisor: Lt Col David Denhard. Sponsor: ASC/YF.

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AIR FORCE RESEARCH LABORATORY

AFRL: AIR VEHICLES DIRECTORATE

MARTINDALE, MICHAEL J. *A Discrete-Event Simulation Model for Evaluating Air Force Reusable Military Launch Vehicle Post-Landing Operations.* AFIT/ILM/ENS/06-09, Faculty Advisor: Dr. Alan Johnson. Sponsor: AFRL/VA.

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McGLADE, PATRICK E. *Effects-Based Operations versus Systemic Operational Design: Is There a Difference?* AFIT/IOA/ENS/06-06, Faculty Advisor: Lt Col David Denhard. Sponsor: AFRL/IF.

MELLOY, JOHN R. *Wireless Sensor Network Applications for the Combat Air Forces.* AFIT/IC4/ENG/06-05, Faculty Advisor: Dr. Barry Mullins. Sponsor: AFRL/IF.

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CLAXTON, JOHN C. *Operational Analysis of Tactical Satellite Orbit Populations.* AFIT/ILM/ENS/06-02, Faculty Advisor: Dr. Alan Johnson. Sponsor: AFRL/VS.

4.3.5 AIR MOBILITY COMMAND

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DABROWSKI, PATRICK W. *Optimizing Real Time Information in the Cockpit (RTIC) Data In Future Air Mobility Command Situational Awareness.* AFIT/IMO/ENS/06E-03, Faculty Advisor: Dr. Rosa Birjandi. Sponsor: AMC/A5Q.

HANSON, DAVID S. *Tip of the Mobility Spear – Developing Joint Precision Airdrop Capability.* AFIT/IMO/ENS/06E-08, Faculty Advisor: Dr. James Moore. Sponsor: AMC

KING, DENNIS C. Jr., *"Look Out Below!" An Analysis of the Joint Precision Airdrop System with 2K Precision Parachute Systems.* AFIT/ILM/ENS/06-07, Faculty Advisor: Dr. James Moore. Sponsor: AMC/A3DT and NSC/JPADS/ACTD.

SANDLIN, DORAL E. and THOMAS D. TORKELSON. *The Trade-Offs of Tanker Air-Refuelability*. AFIT/ILM/ENS/06-13, Faculty Advisor: Dr. Alan Johnson. Sponsor: AMC/A59T.

TORKELSON, THOMAS D. see SANDLIN, DORAL E.

4.3.6 UNITED STATES STRATEGIC COMMAND

DAWSON, GARY R. *Project Angel Fire: Concept of Operations in a Permissive Tactical Environment.* AFIT/ILM/ENS/06-04, Faculty Advisor: Dr. Michael Hicks. Sponsor: US STRATCOM.

4.3.7 UNITED STATES TRANSPORTATION COMMAND

CROFT, EUGENE M. *Efficiency and Effectiveness of Intratheater Airlift in Operation Iraqi Freedom – The CDDOC- A Doctrinal Change.* AFIT/IMO/ENS/06E-02, Faculty Advisor: Maj Kirk Patterson. Sponsor: US TRANSCOM/ J3.

GAAB, SCOTT A. *Improving the Efficiency and Effectiveness of the United States Military's Humanitarian Relief Supply Chain.* AFIT/IMO/ENS/06E-07, Faculty Advisor: Dr. James Moore. Sponsor: US TRANSCOM/J5.

LUKES, CLARENCE W. *The Future Light Cargo Aircraft.* AFIT/IMO/ENS/06E-12, Faculty Advisor: Lt Col Donald Duckro. Sponsor: US TRANSCOM.

MIRAVITE, ALEXANDER, Jr., and CHARLES F. SCHLEGEL. *Global En Route Basing Infrastructure Location Model.* AFIT/IOA/ENS/06-08, Faculty Advisor: Lt Col Raymond Staats. Sponsor: US TRANSCOM JT/TCJ5-A5.

PLATTE, JOHN M. *Accelerating the Flow of US Army Tactical Wheeled Vehicle Armor to the Warfighter: A Case Study in Overcoming Barriers to Successful Supply Chain Management.* AFIT/IMO/ENS/06E-14, Faculty Advisor: Maj Kirk Patterson. Sponsor: USTRANSCOM/J3.

PREVETT, TYLER T. *Sealift or Airlift for Global Mobility?* AFIT/IMO/ENS/06E-15, Faculty Advisor: Maj Bradley Anderson. Sponsor: US TRANSCOM/J3-R.

SCHLEGEL, CHARLES F. see MIRAVITE, ALEXANDER Jr.

STEWARD, MELANIE J. *Effective Teaming for Expeditionary Combat Support.* AFIT/IOA/ENS/06-11, Faculty Advisor: Lt Col Raymond Staats. Sponsor: N/A.

5. ACADEMIC DEPARTMENT PUBLICATIONS AND FUNDING INFORMATION

5.1 DEPARTMENT OF AERONAUTICS AND ASTRONAUTICS

Access Phone: 937-255-3069, DSN 785-3069
Fax: 937-656-7621, DSN 986-7621
Homepage: http://www.afit.edu/en/eny/

5.1.1 DOCTORAL DISSERTATIONS

CINNAMON, JOHN D. *Analysis and Simulation of Hypervelocity Gouging Impacts.* AFIT/DS/ENY/06-01, Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/AFOSR/NM.

MARTIN, LINDSEY F. *Assessing the Potential for Improved Scramjet Performance Through Application of Electromagnetic Flow Control.* AFIT/DS/ENY/06-05, Faculty Advisor: Maj Richard J. McMullan. Sponsor: AFRL/AFOSR/NA.

PARKER, DAVID R. *Uncertainty Estimation for Target Detection System Discrimination and Confidence Performance Metrics.* AFIT/DS/ENY/06-01, Faculty Advisor: Dr. Steven C. Gustafson. Sponsor: AFRL/VASD.

PARKER, GREGORY H. *Dynamic Aeroelastic Analysis of Wing/Store Configurations.* AFIT/DS/ENY/06-06, Faculty Advisor: Lt Col Raymond Maple. Sponsor: AFRL/VASD.

SHEPHERD, MICHAEL J. *Lightweight In-Plane Actuated Deformable Mirrors for Space Telescopes.* AFIT/DS/ENY/06-03, Faculty Advisor: Dr. Richard Cobb. Sponsor: AFRL/AFOSR.

VOGEL, KURT A. *Dynamic and Control of Tethered Satellite Formations for the Purpose of Space-Based Remote Sensing.* AFIT/DS/ENY/06-04, Faculty Advisor: Dr. Richard G. Cobb. Sponsor: N/A.

5.1.2 MASTERS THESES

5.1.2.1 AERONAUTICAL ENGINEERING (GAE)

ABEYGOONEWARDENE, JEEVANI I. S*caling Flight Tests of Unmanned Air Vehicles.* AFIT/GAE/ENY/06-S01, Faculty Advisor: Dr. David R. Jacques. Sponsor: N/A.

*ALLEN, WALTER C. *An Analysis of the Lateral Stability of the Joint Surveillance Target Attack Radar System (E-8C).* AFIT/GAE/ENY/06-01, Faculty Advisor: Dr. Mark F. Reeder. Sponsor: ACC/OL-0011 E8SG JTF/EN, ACC/E8SG/NG, and ACC/330 CTS.

ALMAJALI, MOHAMMAD. *Effects of Difference between Axial and Contact Loads on Fretting.* AFIT/GAE/ENY/06-S02, Faculty Advisor: Dr. Shankar Mall. Sponsor: AFRL/MLLP.

ANISKO, JONATHAN F. *Numerical Investigation of Cavity-Vane Interactions within the Ultra Compact Combustor.* AFIT/GAE/ENY/06-M01, Faculty Advisor: Dr. Ralph A. Anthenien. Sponsor: AFRL/AFOSR/NA.

BABCOCK, JUDSON T. *Free Flight Store Simulation Using Beggar.* AFIT/GAE/ENY/06-M02, Faculty Advisor: Lt Col Raymond Maple. Sponsor: AFMC/46SK

BALACONIS, JOHN G. *Some Aspects of the Mechanical Response of BMI 5250-4 Neat at 191°C: Experiment and Modeling.* AFIT/GAE/ENY/M-03, Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/AFOSR/NL.

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CHAPMAN, BENJAMIN D. *Characterization of Functionally Graded Materials.* AFIT/GAE/ENY/M-05, Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFRL/VASM

COMSTOCK, STEPHEN J. *Development of a Low-Latency, High Data Rate, Differential GPS Relative.* AFIT/GAE/ENG/06-03, Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/SNRN.

CRAWFORD, MATTHEW P. *Optimal Geometric Deployment of a Ground Based Pseudolite Navigation System to Trace a Landing Aircraft.* AFIT/GAE/ENG/06-02, Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/AFOSR.

DELAPP, CHARLES J. *Particle Image Velocimetry Using a Novel, Non-Intrusive Particle Seeding.* AFIT/GAE/ENY/06-J01, Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/VAAI.

DIKE, CHRISTOPHER C. *A Wind Tunnel Investigation of Joined Wing Scissors Morphing.* AFIT/GAE/ENY/06-J02, Faculty Advisor: Dr. Milton E. Franke. Sponsor: N/A.

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DUGAN, JOSEPH M. *Situational Awareness and Synthetic Vision for Unmanned Aerial Vehicle Flight Testing.* AFIT/GAE/ENY/06-J03, Faculty Advisor: Maj Paul A. Blue. Sponsor: N/A.

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FREDRICKSON, BRIAN M. *Application of Spline Variational Analysis Method in the Modeling of Composite Repairs.* AFIT/GAE/ENY/06-M09, Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFRL/MLBCM.

GAMBLE, BRIAN J. *Experimental Analysis of Propeller Interactions with a Flexible Wing Micro-Air-Vehicle.* AFIT/GAE/ENY/06-M10, Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/VAAA.

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HELFRICH, TIMOTHY M. *Cycle Performance of a Pulse Detonation Engine with Supercritical Fuel Injection.* AFIT/GAE/ENY/06-M14, Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/PRTC.

*HETRICK, GRIFFIN. *Effects of Frequency and Environment on Fatigue Behavior of an Oxide-Oxide Ceramic Matrix Composite at 1200°C.* AFIT/GAE/ENY/06-J05, Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/PRTC.

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IN, WON. *Experimental Investigation Into the Aerodynamic Ground Effect of a Tailless Chevron and Lambda-Shaped UCAV's.* AFIT/GAE/ENY/06-M16, Faculty Advisor: Dr. Milton E. Franke. Sponsor: AFRL/VAAA.

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KIMLER, FRED A. *Structural Design of Wing Twist for Pitch Control of Joined Wing Sensor Craft.* AFIT/GAE/ENY/06-M02, Faculty Advisor: Dr. Robert Canfield. Sponsor: AFRL/VAS.

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LEIGH, ELLIOT J. *Simulation of a Moving, Elastic Beam using Hamilton's Weak Principle.* AFIT/GAE/ENY/06-M21, Faculty Advisor: Dr. Donald L. Kunz. Sponsor: AFRL/VASD.

MADHI, ELHOUCINE. *Fretting Fatigue Behavior of Nickel Alloy IN100.* AFIT/GAE/ENY/06-M22, Faculty Advisor: Dr. Shankar Mall. Sponsor: AFRL/MLLP.

MARQUEZ-CHISOLM, DANIEL J. *Natural Frequencies and Mode Shapes of a Nonlinear, Uniform Cantilevered Beam.* AFIT/GAE/ENY/06-S06, Faculty Advisor: Dr. Donald L. Kunz. Sponsor: US Army Aero Flight Dynamics Directorate.

MCCARTHY, PATRICK A. *Characterization of UAV Performance and Development of a Formation Flight Controller for Multiple Small UAV's.* AFIT/GAE/ENY/06-J08, Faculty Advisor: Maj Paul A. Blue. Sponsor: AFRL/VAA.

MCELLROY, JONATHAN A. *Navigation Using Signals of Opportunity in the AM Transmission Band.* AFIT/GAE/ENG/06-04, Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/SNRN.

MCGRAW, ROBERT J. *An Analysis of Nonlinear Elastic Deformations for a Homogeneous Beam at Varying Tip Loads and Pitch Angles.* AFIT/GAE/ENY/06-J09, Faculty Advisor: Dr. Donald L. Kunz. Sponsor: US Army, Aero Flight Dynamics Directorate.

MEHRMAN, JOHN M. *Effect of Hold Times on Fatigue Behavior of Nextel 720™/Alumina Ceramic Matrix Composite at 1200°C in Air and in Steam Environment.* AFIT/GAE/ENY/06-M23, Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/PRTC.

MICELI, DAVID S. *Characterization of a Coflow Nozzle for Use in a Filtered Rayleigh Scattering System.* AFIT/GAE/ENY/06-J10, Faculty Advisor: Dr. Mark F. Reeder. Sponsor: N/A.

MILLER, NATHAN A. *A Comparison of Main Rotor Smoothing Adjustments Using Linear & Neural Network Algorithms.* AFIT/GAE/ENY/06-M24, Faculty Advisor: Dr. Donald L. Kunz. Sponsor: N/A.

MOENTER, DAVID S. *Design and Numerical Simulation of Two Dimensional Ultra Compact Combustor Model Sections for Experimental Observation of Cavity-Vane Flow Interactions.* AFIT/GAE/ENY/06-S06, Faculty Advisor: Dr. Ralph A. Anthenien. Sponsor: AFRL/AFOSR/NA.

MORGANSTERN, SHAWN D. *Alleviation of Buffet-Induced Vibration Using Piezoelectric Actuators.* AFIT/GAE/ENY/06-M25, Faculty Advisor: Robert Canfield. Sponsor: AFRL/VA.

MOSTACCIO, JASON. *Experimental Investigation of the Aerodynamic Ground Effect of a Tailless LAMBDA-Shaped UCAV With Wing Flaps.* AFIT/GAE/ENY/06-J11, Faculty Advisor: Dr. Milton E. Franke. Sponsor: AFRL/VAAA.

MURRAY, KARL N. *Wear Analysis of Cu-AL Coating on TI-6A1-4V Under Fretting.* AFIT/GAE/ENY/06-J12, Faculty Advisor: Dr. Shankar Mall. Sponsor: AFRL/MN.

ORLOFF, BENJAMIN S. *A Comparative Analysis of Single-Stage-to-Orbit Rocket and Airbreathing Vehicles.* AFIT/GAE/ENY/06-13, Faculty Advisor: Dr. Milton E. Franke. Sponsor: ASC/ENMD.

PARK, HONG-JOON. *Three Component Velocity Measurements in the Tip Vortex of a Micro Air Vehicle.* AFIT/GAE/ENY/06-S08, Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/VAAA.

PENDLETON, RONALD J. *Validation of a Scaled Plane Strain Hypervelocity Gouging Model.* AFIT/GAE/ENY/06-M26, Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/AFOSR.

POWERS, KELLY S. *Parameter Estimation of a Tactical Missile using Linear Regression.* AFIT/GAE/ENY/06-S12, Faculty Advisor: Dr. David R. Jacques. Sponsor: NASIC/ADNW.

RADZICKI, ANDREW T. *Rate Dependence of Tensile Properties and Stress-Strain Behavior of an Oxide/Oxide Ceramic Matrix Composite at Elevated Temperature and the Effects of Low-Magnitude Sustained Loading on Composite Microstructure.* AFIT/GAE/ENY/06-S09, Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/PRTC.

ROBINSON, BRENT K. *An Investigation into Robust Wind Correction Algorithms for Off-The-Shelf Unmanned Aerial Vehicle Autopilots.* AFIT/GAE/ENY/06-J14, Faculty Advisor: Maj Paul A. Blue. Sponsor: AFRL/VAA.

ROSS, STEVEN M. *Formation Flight Control for Aerial Refueling.* AFIT/GAE/ENY/06-M35, Faculty Advisor: Dr. David R. Jacques. Sponsor: TPS/EDT.

SCARLETT, JOHN N. *Multibody Dynamic Aeroelastic Simulation of a Folding Wing Morphing Aircraft.* AFIT/GAE/ENY/06-M28, Faculty Advisor: Dr. Robert Canfield. Sponsor: AFRL/VASA.

SCHEEL, KASEY S. *Effects of Polishing Shot-Peened Surfaces on Fretting Fatigue Behavior of Ti-6A1-4V.* AFIT/GAE/ENY/06-S10, Faculty Advisor: Dr. Shankar Mall. Sponsor: AFRL/MLLP.

*SIEGART GREGORY T. *Effect of Environment on Creep Behavior of an Oxide/Oxide CFCC with ±45° Fiber Orientation.* AFIT/GAE/ENY/06-J15, Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/MLLN and AFRL/PRTC.

SIMKO, RICHARD J. *Store Separations from a Supersonic Cone.* AFIT/GAE/ENY/06-M29, Faculty Advisor: Lt Col Raymond C. Maple. Sponsor: AFRL/VAAI.

SULLIVAN, MARK A. *Creep-Rupture and Fatigue Behaviors of Notched Oxide/Oxide Ceramic Matris Composite at Elevated Temperature.* AFIT/GAE/ENY/06-M30, Faculty Advisor: Dr. Shankar Mall. Sponsor: AFRL/MLLN.

VINCENT, ROBERT C. *CFD Investigation of the Flow Dynamics Inside a Spherical Surface Indentation.* AFIT/GAE/ENY/06-M29, Faculty Advisor: Lt Col Raymond C. Maple. Sponsor: N/A.

WALL, JENNIFER D. *An Experimental Study of Pulsed DC Discharge Plasma Flow Control Actuator.* AFIT/GAE/ENY/06-J16, Faculty Advisor: Dr. Milton E. Franke. Sponsor: AFRL/PRTT.

WHITING, MICHAEL S. *Dynamic Nonlinear Bending and Torsion of a Cantilever Beam.* AFIT/GAE/ENY/06-M32, Faculty Advisor: Dr. Donald L. Kunz. Sponsor: US Army Aero Flight Dynamics Directorate.

WILSON, PAUL M. *Simulation of Weapons Release from Cargo Aircraft.* AFIT/GAE/ENY/06-M33, Faculty Advisor: Dr. Milton E. Franke. Sponsor: AFRL/MNAV.

5.1.2.2 ASTRONAUTICAL ENGINEERING (GA)

BROUSSARD, COREY M. *New Tracing Filter Algorithm Using Input Parameter Estimation.* AFIT/GA/ENG/06-01, Faculty Advisor: Dr. Meir Pachter. Sponsor: N/A.

CHRONISTER, JESSICA B. *Structural Health Monitoring Considering Internal Beam Damage.* AFIT/GA/ENY/06-M09, Faculty Advisor: Anthony N. Palazotto. Sponsor: AFRL/VASA.

COOK, KENDRA L. *Characterizing the Impact of Precision Time and Range Measurements from Two-Way Time Transfer Systems on Network Differential GPS Position Solutions.* AFIT/GA/ENG/06-02, Faculty Advisor: Dr. John F. Raquet. Sponsor: N/A.

CORNELIUS, JOHN J. *Development of In-Plane Surface Deformation Sensing for Thin Film PVDF Actuated Membrane Mirrors.* AFIT/GA/ENY/06-M01, Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/AFOSR.

FEDDEN, ANGELINDA D. *Graphitized Carbon Foam with Phase Change Material.* AFIT/GA/ENY/06-M02, Faculty Advisor: Milton E. Franke. Sponsor: AFRL/MLBC.

GOODWIN, JEREMY S. *Detailed Design of the Rigidizable Inflatable Get-Away-Special Experiment.* AFIT/GA/ENY/06-M05, Faculty Advisor: Dr. Richard G. Cobb. Sponsor: N/A.

HELMS, SARAH K. *Development and Testing of an Inflatable Rigidizable Space Structure Experiment.* AFIT/GA/ENY/06-M03, Faculty Advisor: Dr. Richard G. Cobb. Sponsor: N/A.

HOLMES, LINDSEY M. *Estimating Aerodynamic Properties of an Unknown Re-entry Vehicle Using Least Squares Filtering.* AFIT/GA/ENY/06-M04, Faculty Advisor: Lt Col Kerry D. Hicks. Sponsor: N/A.

LEE, DUSTIN W. *Evaluation of Factors Contributing to Damping of Coated and Uncoated Titanium Plates.* AFIT/GA/ENY/06-M06, Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/PRTS.

LITTLE, PATRICK W. *Control Parameters Estimation for a Known Maneuvering Re-Entry Vehicle.* AFIT/GA/ENY/06-S02, Faculty Advisor: Dr. Richard Cobb. Sponsor: N/A.

MCCLELLAND, WILLIAM A. *Inertia Measurement and Dynamic Stability Analysis of a Radio-Controlled Joined Wing Aircraft.* AFIT/GA/ENY/06-M07, Faculty Advisor: Dr. Robert Canfield. Sponsor: AFRL/VASD.

PARIS, JODY A. *The Effects of Using Solar Radiation Pressure to Alleviate Fuel Requirements for Orbit Changing and Maintenance of the DSCS II F-13 Satellite.* AFIT/GA/ENY/06-M08, Faculty Advisor: Lt Col Nathan Titus. Sponsor: AFSPC/SMC/DET 12.

5.1.2.3 ENGINEERING MANAGEMENT (GEM)

HUTCHINGS, MATTHEW B. *Indigenous Architecture for Expeditionary Installations.* AFIT/GEM/ENY/06M-06, Faculty Advisor: Lt Col Ellen England. Sponsor: N/A.

5.1.2.4 MATERIALS AND SCIENCE ENGINEERING (GMS)

FREELS, JASON K. *Modeling Fracture in Z-Pinned Composite Coo-Cured Laminates Using Smeared Properties and Cohesive Elements in DYNA3D.* AFIT/GMS/ENY/06-S01, Faculty Advisor: Dr. Som Soni. Sponsor: AFRL/MLBC.

NG, JONATHAN L. *Fretting Fatigue Behavior of Shot-0Peened IN 100.* AFIT/GMS/ENY/06-M01, Faculty Advisor: Shankar Mall. Sponsor: AFRL/MLLP.

RYBA, JENNIFER L. *Creep Rupture Behavior of a Woven Ceramic Matrix Composite at Elevated Temperatures in a Humid Environment.* AFIT/GMS/ENY/06-M01, Faculty Advisor: Shankar Mall. Sponsor: AFRL/MLLN.

5.1.2.5 SPACE SYSTEMS (GSS)

CATRIB, CHRISTINE A. *An Analysis of Phased Array Radar Fences for Space Surveillance.* AFIT/GSS/ENY/06-M05, Faculty Advisor: Lt Col Nathan A. Titus. Sponsor: HQ AFSPC/XPY.

GSTATTENBAUER, GREG J. *Cost Comparison of Expendable, Hybrid and Reusable Launch Vehicles.* AFIT/GSS/ENY/06-M06, Faculty Advisor: Dr. Milton E. Franke. Sponsor: N/A.

JAMESON, ROBERT E. *Development and Validation of Reentry Simulation Using MATLAB.* AFIT/GSS/ENY/06-M08, Faculty Advisor: Lt Col Kerry D. Hicks. Sponsor: N/A.

OSWEILER, VICTOR P. *Covariance Estimation and Autocorrelation of NORAD Two-Line Element Sets.* AFIT/GSS/ENY/06-M09, Faculty Advisor: Lt Col Nathan A. Titus. Sponsor: N/A.

PETERSON, GINA A. *Control Demonstration of a Thin Deformable In-Plane Actuated Mirror.* AFIT/GSS/ENY/06-M10, Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/AFOSR.

PROVOST, DAMEN R. *The Effects of Modern GPS Technologies on Reentry Vehicle Dispersion Accuracy.* AFIT/GSS/ENY/06-M11, Faculty Advisor: Lt Col Terry Hicks. Sponsor: N/A.

RENDON, AXEL. *Optimal Coverage of Theater Targets with Small Satellite Constellations.* AFIT/GSS/ENY/06-M12, Faculty Advisor: Lt Col Nathan A. Titus. Sponsor: N/A.

VOGT, CHARLES W. *Performance Capability of a Damaged Lighter-Than-Air Vehicle Operating in the Near Space Regime.* AFIT/GSS/ENY/06-M13, Faculty Advisor: Lt Col Nathan A. Titus. Sponsor: AFSPC/A3J.

WEDEKIND, JAMES T. *Characterizing and Controlling the Effects of Differential Drag on Satellite Formations.* AFIT/GSS/ENY/06-M14, Faculty Advisor: Lt Col Nathan A. Titus. Sponsor: AFRL/VS.

5.1.2.6 SYSTEMS ENGINEERING (GSE)

ALBERT, ALAN P., EFSTATHIOS ANTONIOU, DERRICK W. BREWER, STEPHEN D. LEGGIERO, THOMAS I. SAVOIE, MARY R. TEETER, KIMBERLY A. TOOMAN, and RAMON L. VEGLIO. *A Systems Engineering Approach to Integrated Structural Health Monitoring For Again Aircraft.* AFIT/GSE/ENY/06-M02, Faculty Advisor: Dr Som Soni. Sponsor: SAF/IARL.

ALLEN, RONALD G.,RYAN L. BRITTON, TINA M. DEANGELIS, KRISTON L. HORN, LEE G. JACKSON, JAMES D. KEMTER, JASON W. KIMBEL, and BRADLEY M. McALPINE, *Command and Control of Time Sensitive Targeting Operations Utilizing Joint Fires.* AFIT/GSE/ENY/06-M01, Faculty Advisor: Dr David Jacques. Sponsor: USJFCOM.

ANTONIOU, EFSTATHIOS. See ALBERT, ALAN P.

BOND, REED M., DAVID T. CAPONIO, LAWERENCE B. CHILDERS, DONALD J. DAVIS, JOHN V. FONTEJON, KENNETH R. KRANZ, and MICAH K. MOSSMAN. *Project INSIGHT: Threat Modeling and Analysis for Earth-Orbiting Satellites.* AFIT/GSE/ENY/06-M03, Faculty Advisor: Dr Richard Cobb. Sponsor: NASIC/SMSV.

BREWER, DERRICK W. See ALBERT, ALAN P.

BRITTON, RYAN L. See ALLEN, RONALD G.

CAPONIO, DAVID T. See BOND, REED M.

CHILDERS, LAWERENCE B. See BOND, REED M.

DAVIS, DONALD J. See BOND, REED M.

DEANGELIS, TINA M. See ALLEN, RONALD G.

FONTEJON, JOHN V. See BOND, REED M.

HORN, KRISTON L. See ALLEN, RONALD G.

JACKSON, LEE G. See ALLEN, RONALD G.

KEMTER, JAMES D. See ALLEN, RONALD G.

KIMBEL, JASON W. See ALLEN, RONALD G.

KRANZ, KENNETH R. See BOND, REED M.

LEGGIERO, STEPHEN D. See ALBERT, ALAN P.

MCALPINE, BRADLEY M. See ALLEN, RONALD G.

MOSSMAN, MICAH K. See BOND, REED M.

SAVOIE, THOMAS I. See ALBERT, ALAN P.

TEETER, MARY R. See ALBERT, ALAN P.

TOOMAN, KIMBERLY A. See ALBERT, ALAN P.

VEGLIO, RAMON L. See ALBERT, ALAN P.

WONG-JIRU, ANN. *Graph Theoretical Analysis of Network Centric Operation Using.* AFIT/GSE/ENY/06-S01, Faculty Advisor: Lt Col John Colombi. Sponsor: AFMC/653 ELSG.

5.1.3 FUNDED RESEARCH PROJECTS

ANTHENIEN, RALPH A.,

"Development of an Ultra Compact Combustor ." Sponsor: Army Research Office. Funding: $777.

"Flow Optimization of the Ultra Compact Combustor." Sponsor: AFRL/PR. Funding: $8,000.

"Investigation of Cavity - Vane Interaction in an Ultra Compact Combustor." Sponsor: AFRL/AFOSR. Funding: $40,155.

"Investigation of Liquid Flame Spread Behind an Aerodynamic Obstruction." Sponsor: USAF 46 OG/OGM/OL-AC. Funding: $8,000.

"Thermal Management Requirements of Air Vehicles." Sponsor: AFRL/PR. Funding: $5,850.

BLUE, PAUL A., Maj

"Planning, Guidance, and Control for Multiple UAV Cooperative Operations". Sponsor: AFRL/VA. Funding: $36,000. [ANT]

BRANAM, RICHARD D., Maj

"Coaxial Rocket Injection Instability." Sponsor: AFRL/AFOSR. Funding: $17,020.

"Development of Continuum Onset Criteria with Direct Simulation Monte-Carlo using Boltzmann's H-Theorem ." Sponsor: AFRL/VA. Funding: $11,700.

"Rocket and Space Propulsion Testing and Research." Sponsor: AFRL/VA. Funding: $51,700.

CANFIELD, ROBERT A.,

"Continuous Sensitivity Equations and Multi-Point Approximations for Coupled Aero-Structural Systems." Sponsor: AFRL/AFOSR. Funding: $26,170.

"Nonlinear Gust Response via Direct, Least-Squares Formulation." Sponsor: AFRL/VA. Funding $18,397.

COBB, RICHARD A.,

"Closed-loop Control of a Piezo Actuated Membrane Structure." Sponsor: AFRL/AFOSR. Funding: $21,857.

"Evaluation of Innovative Space Missions". Sponsor: AFRL/VS. Funding: $40,000. [ANT]

"Evaluation of Innovative Space Missions". Sponsor: AFRL/VS. Funding: $35,000. [ANT]

FRANKE, MILTON E.,

"Aerodynamic Ground Effects of UCAVs Models." Sponsor: AFRL/VA. Funding: $5,000.

"Boundary Layer Control using Plasma Induced Velocity." Sponsor: AFRL/PR. Funding: $5,000.

"Open Cell PCM Coated Graphitic Foam Thermal Management Applications for Aerospace and Space." Sponsor: AFRL/ML. Funding: $6,564.

"Operability Analysis of Launch Vehicles using Advanced Air-Breathing Propulsion Concepts." Sponsor: AFRL/PR. Funding: $12,500.

JACQUES, DAVID R.,

"Air Force Center for Systems Engineering A-10 Systems Engineering Case Study." Sponsor: AFIT/SY. Funding: $29,000.

"Joint Battle Management Command and Control- Joint Fires Systems Engineering Support." Sponsor: AFRL/SN. Funding: $10,002.

KING, PAUL I.,

"Experimental Investigation of Pylons and Cavities for Scramjet Combustors." Sponsor: AFRL/PR. Funding: $5,000.

"Modeling Engine Pressure Recovery for High Performance Aircraft." Sponsor: NASIC. Funding: $7,500.

"Pulse Detonation Engine Wave Propagation Studies." Sponsor: AFRL/PR. Funding: $5,000.

KUNZ, DONALD L.,

"High-Fidelity Aeroelastic Analysis for Flexible-Wing MAVs." Sponsor: AFRL/AFOSR. Funding: $18,054.

"Performance Prediction Tools for CSAR-X." Sponsor: Special Operations Forces Study Group. Funding: $12,782.

MALL, SHANKAR,

"Performance Degradation of MEMS Switches." Sponsor: SAF/FMBMB-AFOY. Funding: $98,615.

"A Scanning Probe Based Technique for Simultaneous Mapping of Elastic and Adhesive Properties in Nanotube Reinforced Composites." Sponsor: AFRL/AFOSR. Funding: $21,316.

"Characterization of MEMS Switches." Sponsor: AFRL/SN. Funding: $10,000.

MAPLE, RAYMOND C., Lt Col

"Fluid-Structure Interaction in Low Reynolds Number Flapping Flight." Sponsor: AFRL/VA. Funding: $2,600.

"Fluid-Structure Interaction in Low Reynolds Number Flapping Flight." Sponsor: AFRL/VA. Funding: $8,200.

"Fluid-Structure Interaction in Low Reynolds Number Flapping Flight." Sponsor: AFRL/VA. Funding: $12,400.

PALAZOTTO, ANTHONY N.,

"Development of a New Technique for Determining the Strain Dependent Damping and Stiffness Characteristics of Hard Coatings." Sponsor: AFRL/PR. Funding: $18,000.

"Effects of High Energy Impact." Sponsor: AFRL/MN. Funding $7,500.

"Effects of High Energy Impact." Sponsor: AFRL/MN. Funding $7,500.

"Effects of High Energy Impact." Sponsor: AFRL/MN. Funding $2,500.

"Evaluation of Nonlinear Movement in Micro Air Vehicles." Sponsor: AFRL/VA. Funding: $16,200.

"Gouging Mitigation by Considering the Effects of Coatings, Nonequilibrium Thermodynamics and Material Failure." Sponsor: AFRL/AFOSR/NM. Funding: $102,953.

"Investigation of the Response of FGM Considering High Velocity Impact." Sponsor: AFRL/VA. Funding: $15,000.

"Scarf Joint Analysis." Sponsor: AFRL/ML. Funding: $5,000.

"Structural Health Monitoring." Sponsor: AFRL/VA. Funding: $10,000.

REEDER, MARK F.,

"Characterizing Flow Control Effectiveness for Submerged Inlet." Sponsor: AFRL/VA. Funding: $16,000.

"Combined Computational and Experimental Aerodynamic Study of the AFT Store Release at Supersonic Flight Conditions." Sponsor: AFRL/VA. Funding: $14,000.

"Feasibility of Using Dry Ice for Seed Particles in Closed Circuit Wind Tunnels." Sponsor: AFRL/VA. Funding: $10,000.

"Houck Airfoil Geometry Quantification and Performance Assessment." Sponsor: AFRL/VA. Funding: $27,500.

"Time Resolved Filtered Rayleigh Scattering Feasibility Study." Sponsor: AFRL/PR. Funding: $5,000.

RUGGLES-WRENN, MARINA B.,

"Effect of Monazite Coating on Creep Behavior of Two Oxide-Oxide Ceramic Composites at Elevated Temperatures." Sponsor: AFRL/PR. Funding: $6,321.

"Effects of Physical Aging and Chemical Degradation on Mechanical Behavior of High-Temperature Polymer Matrix Composites." Sponsor: AFRL/AFOSR. Funding: $30,663.

"Full-Field Stress and Strain Evaluation of Discontinuities in Functionally Graded Structures ." Sponsor: AFRL/VA. Funding: $7,499.

"Rate-Sensitivity and Short term Creep of 5250-4 Polymer at Room Temperature and at 500F (191C)." Sponsor: AFRL/ML. Funding: $6,000.

WALTER, JEORG D., Maj

"Enhancing Command Communications through Adaptive Networking." Sponsor: AFRL/AFOSR. Funding: $10,000.

"F-15E/System 2 Nuclear Weapon Integration Architecture." Sponsor: F15 SG/VA. Funding: $9,898.

5.1.4 FUNDED EDUCATIONAL PROJECTS

WALTER, JEORG, Maj

"SENG 539NC." Sponsor: Combat Direction Systems Activity Dam Neck. Funding: $15,391.

5.1.5 REFEREED JOURNAL PUBLICATIONS

CANFIELD, ROBERT A.,

Rasmussen, Cody; Canfield, Robert A.; and Blair Maxwell, "Joined-Wing Sensor-Craft Configuration Design," *Journal of Aircraft*, Vol. 43, Number 5, September-October 2006, pp. 1470-1478

Canfield, Robert A.; Toth, Raymond G.; and Melville, Reid, "Vibration and Transonic Flutter Analysis for F-16 Stores Configuration Clearance," *International Journal of Structural Stability and Dynamics.*, Vol. 6, No. 3, September 2006, pp. 377–395

Choi, Seung-Kyum; Canfield, Robert A.; and Grandhi, Ramana V., "Estimation of Structural Reliability for Gaussian Random Fields," *Structure and Infrastructure Engineering,* Vol. 2, Nos. 3-4, Sep.–Dec., 2006, pp. 161-173.

Bae, Ha-Rok; Grandhi, Ramana V.; and Canfield, Robert A., "Accelerated Engineering Design Optimization Using Successive Matrix Inversion Method," *International Journal for Numerical Methods in Engineering*, Vol. 66, Issue 9, May 2006, pp. 1361-1377

Bae, Ha-Rok; Grandhi, Ramana V.; and Canfield, Robert A., "Efficient Successive Reanalysis Technique for Engineering Structures," *AIAA Journal*, Vol. 44, No. 8, August 2006, pp. 1883-1889.

Bae, H.-R.; Grandhi, R.V.; and Canfield, R. A., "Sensitivity Analysis of Structural Response Uncertainty Propagation Using Evidence Theory," *International Journal of Structural and Multidisciplinary Optimization*, Vol. 31, No. 4, April 2006, pp. 270–279.

Bae, Ha-Rok; Grandhi, Ramana V.; and Canfield, Robert A., "Reliability Based Optimization of Engineering Structures under Imprecise Information," *International Journal of Materials and Product Technology*, Vol. 25, No. 1/2/3, 2006, pp. 112–126.

Choi, Seung-Kyum; Grandhi, Ramana V.; and Canfield, Robert A., "Robust Design of Mechanical Systems via Stochastic Expansion," *International Journal of Materials and Product Technology*, Vol. 25, No. 1/2/3, 2006, pp. 127–143.

COBB, RICHARD G.,

*Holstein, R. G., Palazotto, A. N., Cobb, R.G., "Structural Design Considerations of an Inflatable Rigidizable Space Shuttle Experiment", Accepted for Publication in Journal of Aerospace Engineering Sep 06.

KING, PAUL I.,

Millman, D.R., King, P.I. and Beran, P.S.,"Estimating the Probability of Failure of a Nonlinear Aeroelastic System," *AIAA Journal of Aircraft*, Vol. 43, No. 2, March-April 2006, pp. 504-516.

KUNZ, DONALD L.,

Pritchard, J.A. and Kunz, D.L., "A Redesigned Tail Rotor for Improvement of CH-53E High-Altitude Performance," *Journal of the American Helicopter Society*, Vol. 51, No. 3, July 2006, pp. 266-274.

MALL, SHANKAR

Lee, H. and Mall, S., "Fretting Fatigue and Stress Relaxation Behaviors of Shot-Peened Ti-6Al-4V", Journal of ASTM International, Vol. 2, 31-46, 2005.

Ren, W., Mall, S., Sanders, J. and Sharma, S., "Evaluation of Coatings on Ti-6Al-4V Substrate under Fretting Fatigue," Surface and Coatings Technology, Vol. 192, 177-188, 2005.

Jin, O., Mall, S., and Sahan, O., "Fretting Fatigue Behavior of Ti–6Al–4V at Elevated Temperature," International Journal of Fatigue, Volume 27, 395-401, April 2005.

Martinez, S.A., Sathish, S., and Mall, S., and Blodgett, M.P., "Effects of Fretting Fatigue on the Residual Stress of Shot-Peened Ti-6Al-4V", Journal of Materials Sciences & Engineering, Vol. A399, 58-63, 2005.

Lee, H., Mall, S., and Sathish, S., "Investigation into Effects of Re-Shot-Peening on Fretting Fatigue Behavior of Ti-6Al-4V," Materials Science and Engineering-A, Vol. 390, 227-232, 2005.

Sabelkin, V., Martinez, S. A., Mall, S., Sathish, S., and Blodgett, M. P., "Effects of Shot Peening Intensity on Fretting Fatigue Crack Initiation Behavior of Ti-6A1-4V", Fatigue & Fracture of Engineering Materials and Structures, Vol. 28, 321-332, 2005.

Martinez, S. A., Sathish, S., Mall, S., and Blodgett, M. P., "Evolution of Fretting Fatigue Damage and Relaxation of Residual Stress in Shot Peened Ti-6Al-4V", Metallurgical and Materials Transactions, Vol. 36A, 3385-3396, 2005.

Lee, H., Mall, S., Sanders, J. H. and Sharma, S. K., "Wear Analysis of Cu-Al Coating on Ti-6Al-4V Substrate under Fretting Condition," Tribology Letters, Vol. 19, 239-248, 2005.

Lee, H., Coutu, R. A., Mall, S., and Kladitis, P. E., "Nanoindentation Technique for Characterizing Cantilever Beam Style RF Microelectromechanical Systems (MEMS) Switches," J. Micromech. Microeng., Vol. 15, 1230-1235, 2005.

Lietch, L. C, Lee, H. and Mall, S., "Fretting Fatigue Behavior of Ti-6Al-4V under Seawater Environment," Materials Science and Engineering: A, Vol. 403, 281-289, 2005.

Mall, S., "Effects of Moisture on Fatigue Behavior of SiC/SiC Composite at Elevated Temperature," Materials Science and Engineering: A, Vol. 412, 165-170, 2005.

Kim, H. S. and Mall, S., "Investigation into Three Dimensional Effects of Finite Contact Width on Fretting Fatigue," Finite Elements in Analysis and Design, Vol. 41, 1140-1159, 2005.

Sabelkin, V. and Mall, S., "Investigation into Relative Slip during Fretting Fatigue under Partial Slip Fretting Fatigue," Fatigue & Fracture of Engineering Materials & Structures, Vol. 28, 809-824, 2005.

MAPLE, RAYMOND C., Lt Col

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5.1.7 SUBSTANTIAL CONSULTATIONS

FRANKE, MILTON E.,

Air Force Research Laboratory (AFRL/MN, AFRL/PR, AFRL/MLBC, AFRL/PRAT, AFRL/VAAA)

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5.1.8 PRESENTATIONS

BRANAM, RICHARD D.,

J. Camberos, C. Schrock, R. McMullan, R. Branam "Development of Continuum Onset Criteria with Direct Simulation Monte– Carlo Using Boltzmann's H–Theorem,", AIAA Thermophysics and Heat Transfer Conference, 5-8 June 06.

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M. B. Ruggles-Wrenn, "Effects of Physical Aging and Chemical Degradation on Mechanical Behavior of High-Temperature Polymer Matrix Composites", *AFOSR Polymer Chemistry & Polymer Matrix Composites Program Review*, Long Beach, CA, 5-6 May, 2006.

A. McClung and M. B. Ruggles-Wrenn, "Deformation Behavior of Solid Polymers: Experimental Results in Relation to Constitutive Models", *31st Dayton Cincinnati Aerospace Science Symposium*, Dayton, OH, March 7, 2006.

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Torvik, P. J. "Sources of Error in Obtaining Damping Properties of Hard Coatings from Vibration Tests," 76th Shock and Vibration Symposium, Ft. Destin, FL, Oct 30-Nov 3, 2005.

WALTER, JOERG D., Maj

Walter J. D. "Integrated Structural Health Monitoring for Aging Aircraft", 9th Annual Systems Engineering Conference, National Defense Industries Association, 25 Oct 2006.

5.1.9 BOOKS AND CHAPTERS IN BOOKS

JACQUES, DAVID

*C. S. Schulz, D. Jacques and M. Pachter: "Cooperative Control Simulation Validation Using Applied Probability Theory", *Theory and Algorithms for Cooperative Systems*, World Scientific, (2005), pp. 481-493.

*D. Decker, D. Jacques and M. Pachter: "Wide Area Search and Engagement for Single and Multiple Warhead Air Vehicles with Applications", *Theory and Algorithms for Cooperative Systems*, World Scientific, (2006).

5.1.10 OTHER SIGNIFICANT PROFESSIONAL ACTIVITIES

BRANAM, RICHARD D.,

Executive Committee: 31st Dayton-Cincinnati Aerospace Sciences Symposium

Technical Paper Referee: *AIAA Journal* of Propulsion and Power

CANFIELD, ROBERT A.,

Publications Sub-Committee Chair: AIAA Multidisciplinary Design Optimization Technical Committee

Technical Paper Referee: *International Journal for Structural and Multidisciplinary Optimization, International Journal of Solids and Structures, AIAA Journal*

Conference Paper Referee: AIAA Multidisciplinary Analysis and Optimization Conference

Session Chair: AIAA Multidisciplinary Analysis and Optimization Conference, Portsmouth, VA, Sep 2006; and AMSE Dayton Engineering and Sciences Symposium, Oct 2005

COBB, RICHARD G.,

Session Chair: Dayton-Cincinnati Aerospace Sciences Symposium

Technical Paper Referee: *AIAA Journal* and *AIAA Journal of Spacecraft and Rockets*

Conference Paper Referee: AIAA Structures, Structural Dynamics and Materials (SDM) Conference

FRANKE, MILTON E.,

American Society of Mechanical Engineers (ASME):(1) Representative to the American Association for the Advancement of Science (AAAS) (2) Member and Chair Committee on Organization and Rules reporting to the ASME Board of Governors

American Institute of Aeronautics and Astronautics (AIAA): Member and Co-Chair, Weapon System Effectiveness Technical Committee

GREENDYKE, ROBERT B.,

Member, AIAA Thermophysics Technical Committee, 2001 – Present

Best Paper Subcommittee Chairman, 2002 – Present

Conference Paper Referee: AIAA 44th Aerospace Sciences Meeting, AIAA 45th Aerospace Sciences Meeting, AIAA 38th Thermophysics Conference, AIAA 39th Thermophysics Conference

Technical Paper Referee: AIAA Journal of Spacecraft & Rockets

KUNZ, DONALD L.,

Committee Member: AIAA Structural Dynamic Technical Committee, AHS Education Committee

Session Chair: 47th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference

Technical Paper Referee: *AIAA Journal; Journal of Aircraft* (3 papers)

Conference Paper Referee: 47th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference

LIEBST, BRADLEY S.,

Technical Paper Referee: *AIAA Journal; Journal of Aircraft;* and *Journal of Guidance, Control and Dynamics*

Member: Board of Directors, Honors Seminars of Metropolitan Dayton, Inc.

MAPLE, RAYMOND C., Lt Col

Session Chair: Dayton-Cincinnati Aerospace Sciences Symposium

REEDER, MARK F.,

Technical Paper Referee: *ASME Journal of Fluids Engineering an AIAA Journal of Aircraft*

Session chair at the AIAA 36th Fluid Dynamics Conference (San Francisco, June 2006) and at the AIAA Dayton-Cincinnati Aerospace Science Symposium (March 2006).

RUGGLES-WRENN, MARINA B.,

Design & Analysis Technical Committee Chair: ASME Pressure Vessel and Piping Division

Symposium Organizer: Composite Materials and Structures, Design and Analysis, ASME 2006 Pressure Vessel and Piping Conference

Session Chair: ASME 2006 Pressure Vessel and Piping Conference

Session Chair: ASME 2005 International Mechanical Engineering Congress & Exposition

Technical Paper Referee: *International Journal of Fatigue, Composites Part A: Applied Science and Manufacturing; ASME Journal of Pressure Vessel Technology; Composites Science and Technology,* and ASME 2006 Pressure Vessel and Piping Conference;

SONI, SOM R.,

Technical Paper Referee: *Journal of Computational and Theoretical Nanosciences*

Peer Review: AFOSR Proposals

Resource Chair/Honors Seminars of Metropolitan Dayton, Inc.

TORVIK, PETER J.,

Member: Review Committee for Selection of AIAA Fellows

Technical Paper Referee: *AIAA Journal, Journal of Shock and Vibration, Journal of Sound and Vibration, Journal of the Acoustical Society of America*

WALTER, JOERG D.,

Session chair at the AIAA Dayton-Cincinnati Aerospace Science Symposium (March 2006).

WIESEL, WILLIAM E.,

Secretary and Member: Board of Directors, Honors Society of Metropolitan Dayton, Inc.

5.2 DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

Access Phone: 937-255-2024, DSN 785-2024
Fax: 937-656-7061, DSN 986-7061
Homepage: http://www.afit.edu/en/eng/

5.2.1 DOCTORAL DISSERTATIONS

BLAKE, TRAVIS F. *Reconstructing Spectral Scenes using Statistical Estimation to Enhance Space Situational Awareness.* AFIT/DS/ENG/06-05, Faculty Advisor: Lt Col Matthew E. Goda. Sponsor: AFRL/VA.

CORBELL, PHILLIP M. *Adaptive Illumination Patterns for Radar Applications.* AFIT/DS/ENG/06-01, Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/SNHE

CRABTREE, PETER N. *Performance-Metric Driven Atmospheric Compensation for Robust Free-Space Laser Communication.* AFIT/DS/ENG/06-03, Faculty Advisor: Lt Col Matthew E. Goda. Sponsor: AFRL/DES.

MACDONALD, ADAM. *Blind Deconvolution of Anisoplanatic Images Collected by a Partially Coherent Imaging System.* AFIT/DS/ENG/06-04, Faculty Advisor: Dr. Stephen C. Cain. Sponsor: AFRL/SNJ.

*ROBERTS, MARCUS L. *A General Framework for Analyzing, Characterizing, and Implementing Spectrally Modulated, Spectrally Encoded Signals.* AFIT/DS/ENG/06-06, Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/SNRW and AFRL/IFGD.

ROELKE, GEORGE R. *Fault and Defect Tolerant Computer Architectures: Reliable Computing with Unreliable Devices.* AFIT/DS/ENG/06-07, Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/VA.

*ROBERTS, MARCUS L. *A General Framework for Analyzing, Characterizing, and Implementing Spectrally Modulated, Spectrally Encoded Signals.* AFIT/DS/ENG/06-06, Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/SNRW and AFRL/IFGD.

SCHULTHESS, MARCUS R. *Modeling and Optimal Estimation of Atmospherically Induced Pointing Error.* AFIT/DS/ENG/06-08, Faculty Advisor: Lt Col Matthew E. Goda. Sponsor: AFRL/DE.

VETH, MICHAEL J. *Fusion of Imaging and Inertial Sensors for Navigation.* AFIT/DS/ENG/06-09, Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/MN.

5.2.2 MASTERS THESES

5.2.2.1 COMPUTER ENGINEERING (GCE)

BELL, GARRICK A. *An Interactive Relaxation Approach for Anomaly Detection and Preventive Measures in Computer Networks.* AFIT/GCE/ENG/06-01, Faculty Advisor: Dr. Guna Seetharaman. Sponsor: N/A.

KAUTZ, JUSTIN. *An Adaptable Energy-Efficient Medium Access Control Protocol for Wireless Sensor Networks.* AFIT/GCE/ENG/06-03, Faculty Advisor: Dr. Barry Mullins. Sponsor: AFRL/IFSC.

PULEO, ANTHONY J. *Mitigating Insider Threat using Human Behavior Influence Models.* AFIT/GCE/ENG/06-04, Faculty Advisor: Dr. Robert Mills. Sponsor: N/A.

SANCHEZ, ESTEBAN FRANCISCO. Evaluation of the Effects of Predicted Associativity on the Reliability and Performance of Mobile Ad Hoc Networks. AFIT/GCE/ENG/06-05, Faculty Advisor: Dr. Barry Mullins. Sponsor: AFCA/ENAN(HAF).

SANCHEZ, ROBERTO C. *Managing Bandwidth and Traffic via Bundling and Filtration in Large Scale Distributed Simulations.* AFIT/GCE/ENG/06-06, Faculty Advisor: Dr. Kenneth Hopkinson. Sponsor: ASC/XRA.

SESSLER, BRIAN A. *Evaluation and Analysis of Node Localization Power Cost in Ad Hoc Wireless Sensor Networks with Mobility.* AFIT/GCE/ENG/06-07, Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/IFSC.

SLEAR, JAMES N. *AFIT UAV Swarm Mission Planning and Simulation System.* AFIT/GCE/ENG/06-08, Faculty Advisor: Dr. Gary B. Lamont. Sponsor: AFRL/IFSC and AFRL/SNZW.

5.2.2.2 COMPUTER SCIENCE/COMPUTER SYSTEMS (GCS)

ALHARBI, MOHAMMED A. *Fast Video Stabilization Algorithms.* AFIT/GCS/ENG/06-02, Faculty Advisor: Dr. Guna Seetharaman. Sponsor: N/A.

BROWN, SILAS J. *Applying Data Mining Techniques to Dynamically Model the ELINT Enterprise.* AFIT/GCS/ENG/06-01, Faculty Advisor: Dr. Henry Potoczny. Sponsor: N/A.

CREWS, CARRIE. *Robot Localization Using Visual Image Mapping.* AFIT/GCS/ENG/06-03, Faculty Advisor: Dr. Gilbert Peterson. Sponsor: AFRL/SNRP.

CROCKFORD, ANDREW S. *Exploiting Semi-Directional Transceivers for Localization in Communication Systems.* AFIT/GCS/ENG/06-04, Faculty Advisor: Maj Scott R. Graham. Sponsor: AFRL/AFOSR.

DRESSLER, JUDSON C. *Optimizing the Replication of Multi-Quality Web Applications Using ACO and WoLF.* AFIT/GCS/ENG/06-05, Faculty Advisor: Maj Christopher B. Mayer. Sponsor: AFRL/IFSE.

FRASER, NICHOLAS A. *Mitigating Distributed Denial of Service Attacks in an Anonymous Routing Environment: Client Puzzles and Tor.* AFIT/GCS/ENG/06-06, Faculty Advisor: Dr. Richard A. Raines. Sponsor: N/A.

HALE, SCOTT C. *Flashlight: A Dynamic Detector of Shared State, Race, Conditions, and Locking Model in Concurrent Java Programs.* AFIT/GCS/ENG/06-08, Faculty Advisor: Maj Robert Graham. Sponsor: NSA/ALPHA/NCSC.

KIRCHNER, BRIAN. *A Monocular Vision Based Approach to Flocking.* AFIT/GCS/ENG/06-09, Faculty Advisor: Dr. Gilbert Peterson. Sponsor: AFRL/SNRP.

OKOLICA, JAMES S. *Detecting Potential Insider Threats Through Email Datamining.* AFIT/GCS/ENG/06-01, Faculty Advisor: Dr. Gilbert Peterson. Sponsor: NSA.

PRICE, IAN C. *Evolving Self-Organized Behavior for Homogeneous and Heterogeneous UAV or UCAV Swarms.* AFIT/GCS/ENG/06-11, Faculty Advisor: Dr. Gary B. Lamont. Sponsor: AFRL/SNZW.

SPINELLI, CHRISTOPHER J. *Development and Testing of a High-Speed Real-Time Kinematic Precise DGPS Positioning System Between Two Aircraft.* AFIT/GCS/ENG/06-12, Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/SNRN.

5.2.2.3 ELECTRICAL ENGINEERING (GE)

AMT, JOHN ROBERT H. *Methods for Aiding Height Determination in Pseudolite-Based Reference Systems Using Batch Least-Squares Estimation.* AFIT/GE/ENG/06-03, Faculty Advisor: Dr. John Raquet. Sponsor: AFMC.

AUNE, SHAYNE C. *Comparison of Ray Tracing through Ionospheric Models.* AFIT/GE/ENG/06-04, Faculty Advisor: Lt Col Matthew Goda. Sponsor: AFRL/VSBXP.

BAIZERT, PIOTR. *Forward Looking Radar Clutter Suppression Using Frequency Diverse Arrays*. AFIT/GE/ENG/06-05, Faculty Advisor: Maj Todd Hale. Sponsor: AFRL/SN.

BAUMGARTNER, MICHAEL C. *Nonlinear Suppression of Range-Ambiguous Clutter for Outdoor Radar Measurement Facilities.* AFIT/GE/ENG/06-06, Faculty Advisor: Maj Todd Hale. Sponsor: AFMC/46SK.

BORKOWSKI, JEFFREY M. *A Minimum Effort Control Approach to Guided Munition Path Planning.* AFIT/GE/ENG/06-07, Faculty Advisor: Lt Col Juan Vasquez. Sponsor: AFRL/MNGN.

BORTLE, JONATHAN. *A Measurement and Prediction-Based Validation of the AFIT Large Commercial Aircraft IR Trend Analysis Tool*. AFIT/GE/ENP/06-01, Faculty Advisor: Dr. Michael Marciniak. Sponsor: AFRL/SNS.

BRUCKART, STEPHEN A. *Multi-frame Shift Estimation.* AFIT/GE/ENG/06-08, Faculty Advisor: Dr Stephen Cain. Sponsor: AFRL/SNJ.

BUCKREIS, JOHN T. *Space-Time Adaptive Processing for Side-Looking Arrays with Platform Maneuver*. AFIT/GE/ENG/06-09, Faculty Advisor: Maj Todd Hale. Sponsor: AFRL/SNJM.

BURRIS, CHARLES R. *An Estimation Theory Approach to Detection and Ranging of Obscured Targets in 3-D.* AFIT /GE/ENG/06-10, Faculty Advisor: Dr. Stephen Cain. Sponsor: AFRL/SNJM.

BUTTS, JONATHAN W. *Formal Mitigation Strategies for the Insider Threat: A Security Model and Risk Analysis Framework.* AFIT /GE/ENG/06-57, Faculty Advisor: Dr. Robert Mills. Sponsor: N/A.

CADY, E. M. *A Study of Near Field Data Transformed to the Far Field for a Canonical PEC Scattered.* AFIT/GE/ENG/06-11, Faculty Advisor: Dr. Andrew J. Terzouli. Sponsor: ASC/ENAD.

CASSELL, KIRT J. *Investigation of Frequency –Domain and Time-Domain Free-Space Material Measurements.* AFIT/GE/ENG/06-12, Faculty Advisor: Dr. Michael Havrilla. Sponsor: AFRL/SN.

CHAMPION, JONATHAN P. *Image Processing Resource Allocation Methods for Multi-Target Tracking of Dismounted Targets in Urban Environments.* AFIT/GE/ENG/06-13, Faculty Advisor: Lt Col Juan Vasquez. Sponsor: AFRL/SNAT.

CHEZEM, JOHN R.V. *Analysis of Photoconductive Properties in $Ge_2B_2Te_5$ (GST) Chalcogenide Films for Applications in Novel Electronics.* AFIT/GE/ENG/06-14, Faculty Advisor: Lt Col James Fellows. Sponsor: AFRL/IF-TA.

CHRISTIANSEN, BRADLEY D. *Active FPGA Security through Decoy Circuits.* AFIT/GE/ENG/06-15, Faculty Advisor: Dr. Yong Kim. Sponsor: AFRL/SNTA.

CONLEY, JAMES D. *Coexistent Performance Characterization of a Simulated Offset GMSK System.* AFIT/GE/ENG/06-16, Faculty Advisor: Dr. Michael Temple. Sponsor: AFRL/IFGD.

DENNINGHOFF, DANIEL J. *Power-Scavenging MEMS Robots.* AFIT/GE/ENG/06-17, Faculty Advisor: Maj Lavern Starman. Sponsor: AFRL/MNAV.

ECKERT, REBECCA J. *Polar Phase Screens: A Comparison with other Methods of Random Phase Screen Generation*. AFIT/GE/ENG/06-18, Faculty Advisor: Lt Col Matthew Goda. Sponsor: AFRL/DES.

FADUL, JOSE E. *Toward the Static Detection of Deadlock in Java Software.* AFIT/GE/ENG/06-19, Faculty Advisor: Maj Robert Graham. Sponsor: NSA/HCSS/R21.

FEHLEN, RONALD G. *Air Gap Error Compensation for Coaxial Transmission Line Methods of Electromagnetic Material Characterization.* AFIT/GE/ENG/06-20, Faculty Advisor: Dr. Michael Havrilla. Sponsor: The Boeing Co.

GUSTAV JULIO JORDT. *Evaluation of Energy Costs and Error Performance of Range-Aware, Anchor-Free Localization Algorithms for Wireless Sensor Networks.* AFIT/GE/ENG/06-02, Faculty Advisor: Dr. Rusty Baldwin. Sponsor: AFRL/IFSC.

HANSEN, ERIC G. *Multilingual Phoneme Models for Rapid Speech Processing System.* AFIT/GE/ENG/06-02, Faculty Advisor: Dr. Steven Gustafson. Sponsor: AFRL/HECP.

HENDENBERG, JOHN M. *Characterization of Binary Offset Carrier (BOC) Systems Coexisting with Wideband Signals.* AFIT/GE/ENG/06-02, Faculty Advisor: Dr. Michael Temple. Sponsor: AFRL/SNRW.

HERWEG, JARED A. *Passive Objective Detection Using Illumination of Opportunity and a Moving Receiver.* AFIT/GE/ENG/06-21, Faculty Advisor: Dr. Andrew Terzouli. Sponsor: AFRL/SNRW.

HORNBACK, JESSE R. *Speak Recognition using Mellin Transform.* AFIT/GE/ENG/06-22, Faculty Advisor: Dr. Steven Gustafson. Sponsor: AFRL/HECP.

HYATT, ANDREW W. *Doppler Aliasing Reduction In Wide-Angle Synthetic Aperture Radar Using Phase Modulated Random Stepped-Frequency Waveforms.* AFIT/GE/ENG/06-23, Faculty Advisor: Dr. Todd Hale. Sponsor: AFRL/SNRT.

HYDE, MILO W. *Determining the Resistive Sheets Using Transmission Measurements.* AFIT/GE/ENG/06-24, Faculty Advisor: Dr. Michael Havrilla. Sponsor: N/A.

ILLARI, Roger A. *Development of a Wireless Model Incorporating Large Scale Fading in a Rural, Urban and Suburban Environment.* AFIT/GE/ENG/06-25, Faculty Advisor: Dr. Barry Mullins. Sponsor: AFCA/ENAN.

IVES, JASON L. *Elevation of a Field Programmable Gate Array Circuit Reconfiguration System.* AFIT/GE/ENG/06-26, Faculty Advisor: Dr. Rusty Baldwin. Sponsor: AFRL/VSSE.

KIM, BRYAN S. *Evaluating the Correlation Characteristics of Arbitrary AM and FM Radio Signals for the Purpose of Navigation.* AFIT/GE/ENG/06-28, Faculty Advisor: Dr. Michael Temple. Sponsor: AFRL/SNRP.

KOBOLD, MICHAEL C. *Laser Covariance Vibrometry for Unsymmetrical Mode*. AFIT/GE/ENG/06-61, Faculty Advisor: Dr. Stephen Cain. Sponsor: AFRL/SNAT.

KOZAK, MATTHEW C. *Multiple Model Methods for Cost Function Based Multiple Hypothesis Trackers*. AFIT/GE/ENG/06-29, Faculty Advisor: Dr. Peter Maybeck. Sponsor: AFOSR/NM.

KRUPP, GARY G. *Characterization of Xpatch Incremental Length Diffraction Coefficients*. AFIT/GE/ENG/06-30, Faculty Advisor: Dr. Michael Havrilla. Sponsor: AFRL/SNAS.

KUBLER, THOMAS L. *Ant Clustering with Locally Weighting ANT Perception and Diversified Memory.*AFIT/GE/ENG/06-31, Faculty Advisor: Dr. Gilbert Peterson. Sponsor: NSA/NIETP.

LASH, PAUL C. *Comparison of Computational Electromagnetic Codes for Prediction of Low-Frequency Radar Cross Section.* AFIT/GE/ENG/06-32, Faculty Advisor: Dr. Michael Havrilla. Sponsor: NASIC/ADNS.

LAWSON, TIMOTHY W. *Side-Looking Airborne Adaptive Operation in Hot Clutter.* AFIT/GE/ENG/06-33, Faculty Advisor: Maj Todd Hale. Sponsor: AFRL/SNRT.

LEE, SANG H. *Investigation of the Effects of Target Feature Variations Ballistic Missile RCS.* AFIT/GE/ENG/06-34, Faculty Advisor: Lt Col James Fellows. Sponsor: ACC.

LEMANSKI, CHRISTOPHER D. *Synthetic Aperture Radar and Geolocation Moving Target Focusing and Geolocation Using Moving Reference Processing.* AFIT/GE/ENG/06-35, Faculty Advisor: Maj Todd Hale. Sponsor: AFRL/SNRT.

LINNENKAMP, NICHOLAS L. *Decision Direction and Constant Modulus Algorithms Derived and Evaluated for Multi-carrier Systems.* AFIT/GE/ENG/06-36, Faculty Advisor: Dr. Richard Martin. Sponsor: AFRL/SNRW.

MACDONALD, JOHN C. *Characterization of Radio Frequency Receiver Emissions: A Proof of Concept.* AFIT/GE/ENG/06-37, Faculty Advisor: Dr. Michael Temple. Sponsor: AFRL/SNRW.

MARINO, JASON E. *Detection and Characterization of Commercial GSM Intracellular Radio Frequency "Observables".* AFIT/GE/ENG/06-38, Faculty Advisor: Dr. Michael Temple. Sponsor: AFRL/SNRW.

MARTIN, MARK. *Design and Characterization of a Radiation Tolerant Triple Mode Redundant Sense Amplifier Flip-Flop for Space Applications.* AFIT/GE/ENG/06-39, Faculty Advisor: Dr. Yong Kim. Sponsor: AFRL/VSSE.

MAWHORTER, STEVEN. *Active Operational Tracking with Spatial Light Modulators.* AFIT/GE/ENG/06-40, Faculty Advisor: Dr. Matthew Goda. Sponsor: AFRL/SN.

MAYNARD III, JOHN. *Bio-Inspired, Odor Based Navigation.* AFIT/GE/ENG/06-48, Faculty Advisor: Lt Col Juan Vasquez. Sponsor: AFRL/SNRP.

MENDEZACEVES, ENRIQUE. *Biological System Impedance Identification Using Stochastic Estimation and Control.* AFIT/GE/ENG/06-41, Faculty Advisor: Lt Col Juan Vasquez. Sponsor: N/A.

MIMS, WILLIE H. *Wideband Signal Detection Using a Down-Converting Channelized Receiver.* AFIT/GE/ENG/06-42, Faculty Advisor: Dr. Michael Temple. Sponsor: AFRL/SNRP.

MINK, STEVEN S. *Microelectro-mechanical Systems (MEMS) Interrupter for Safe and Arm Devices.* AFIT/GE/ENG/06-43, Faculty Advisor: Maj Lavern Starman. Sponsor: AFRL/MNMF.

MORRIS, KEVIN M. *Performance Analysis of a Cooperative Search Algorithm for Multiple for Multiple Unmanned Aerial Vehicles Under Limited Communication Conditions.* AFIT/GE/ENG/06-44, Faculty Advisor: Dr. Barry E. Mullins. Sponsor: USAFA/DFEC.

PARIS, NEIL D. *LQG/LTR Tilt and Tip Control for the Starfire Optical Range 3.5 meter Telescope's Adaptive Optics System*. AFIT/GE/ENG/06-37, Faculty Advisor: Lt Col Juan Vasquez. Sponsor: AFRL/DESA.

PETRUCCI, DAVID J. *Gaussian Mixture Reduction for Bayesian Target Tracking in Clutter.* AFIT/GE/ENG/06-01, Faculty Advisor: Dr. Peter Maybeck. Sponsor: AFOSR/NM.

PITZER, TIMOTHY L. *A Platform for Antenna Optimization with Numerical Electromagnetics Codes Incorporated with Genetic Algorithms.* AFIT/GE/ENG/06-46, Faculty Advisor: Dr. Andrew Terzouli. Sponsor: AFRL/SNRW.

POCHET, MICHAEL C. *Characterization of the Field Emission Properties of Carbon Nanotubes Formed on Silicone Carbide Substrates by Surface Decomposition*. AFIT/GE/ENG/06-47, Faculty Advisor: Lt Col James Fellows. Sponsor: AFRL/MN.

REHM, CHRISTOPHER R. *Signal Characterization Using Entropy-Based Spectral Processing.* AFIT/GE/ENG/06-50, Faculty Advisor: Dr. Michael Temple. Sponsor: N/A.

RICE, CHRISTOHER A. *Fast Scene Based Non-Uniformity Correction with Minimal Temporal.* AFIT/GE/ENG/06-59, Faculty Advisor: Dr. Stephen Cain. Sponsor: AFRL/SNJM.

SHOCKLEY, JEREMIAH A. *Estimation and Mitigation of Unmodeled Errors for a Pseudolite Based Reference System.* AFIT/GE/ENG/06-51, Faculty Advisor: Dr. John Raquet. Sponsor: AFMC/746th Test Squadron.

SIKES, CLINT R. *Non-Cooperative Detection of Frequency-Hopped GMSK Signals.* AFIT/GE/ENG/06-37, Faculty Advisor: Dr. Robert Mills. Sponsor: AFRL/SNRW.

STARR, MICHAEL S. *Embedded GPS Jamming Proof of Concept.* AFIT/GE/ENG/06-54, Faculty Advisor: Dr. John Raquet. Sponsor: USAF/TPS.

SOMANN, JESSE D. *Characterization and Design of High-Level VHDL I/Q Frequency Downconverter via Special Sampling Scheme.* AFIT/GE/ENG/06-53, Faculty Advisor: Dr Yong Kim. Sponsor: AFRL/SNDI.

THOMPSON, JAMES D. *Verification of a Decision Level Fusion Algorithm Using a Proven ATR System and Measured SAR Data.* AFIT/GE/ENG/06-60, Faculty Advisor: Dr. Steven Gustafson. Sponsor: AFRL/SNZT.

UZPEN, Shelly A. *A Measurement Based Examination of Optical Signature Changes Due to Weathering Effects on Aircraft Paint.* AFIT/GE/ENP/06-02, Faculty Advisor: Dr. Michael Marciniak. Sponsor: AFRL/SNS.

WARDELL, DEAN C. *Application of Fuzzy State Aggregation and Policy Hill Climbing to Multi-Agent Systems in Stochastic Environments*. AFIT/GE/ENG/06-55, Faculty Advisor: Dr. Gilbert Peterson. Sponsor: AFRL/SNRN.

WILLEMSEN, LEROY S. *Supplementing an Ad Hoc Wireless Network Routing Protocol with Radio Frequency Identification Tags.* AFIT/GE/ENG/06-56, Faculty Advisor: Dr. Rusty Baldwin. Sponsor: AFRL/IFSC.

WOOD, CHRISTOPHER C. *Multi-Dimensional Wave Front Sensing Algorithms for Embedded Tracking and Adaptive Optics.* AFIT/GE/ENG/06-57, Faculty Advisor: Dr. Stephen Cain. Sponsor: AFRL/SNRT.

YOUNG, MATTHEW V. *An Airborne Radar Model for Non-Uniformly Spaced Antenna Arrays.* AFIT/GE/ENG/06-58, Faculty Advisor: Maj Todd Hale. Sponsor: AFRL/SNRT.

5.2.2.4 INFORMATION ASSURANCE (GIA)

CLAYCOMB, CRAIG A. *Analysis of Windows Rootkit Detection Tools.* AFIT/GIA/ENG/06-03, Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/SN.

DUBE, THOMAS E. *Metamorphism as a Software Protection for Non-Malicious Code.* AFIT/GIA/ENG/06-04, Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/SNTA.

FINNIGIN, KEVIN M. *Cryptanalysis of Pseudorandom Number Generators in Wireless Sensors Networks.* AFIT/GIA/ENG/06-05, Faculty Advisor: Dr. Barry E. Mullins. Sponsor: NSA.

KING, WILLIAM H. *Development of a Malicious Insider Composite Vulnerability Assessment Methodology.* AFIT/GIA/ENG/06-06, Faculty Advisor: Dr. Robert Mills. Sponsor: NSA.

LEVOY, TERRY E. *Development of a Methodology for Customizing Insider Threat Auditing on a Microsoft Windows XP® Operating System.* AFIT/GIA/ENG/06-07, Faculty Advisor: Dr. Robert Mills. Sponsor: NSA.

PARK, BARRY W. *A Real-Time Wireless Sensor Media Access Control Protocol.* AFIT/GIA/ENG/06-08, Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFCA/ENAN.

REYNOLDS, M. BRENT. *Mitigating TCP Degradation Over Intermittent Link Failures Using Intermediate Buffers.* AFIT/GIA/ENG/06-09, Faculty Advisor: Maj Scott Graham. Sponsor: AFRL/AFOSR.

WEAVER, ROBERT V., III. *Leveraging ITIL to Govern AOC Information Technology.* AFIT/GIA/ENG/06-01, Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFMC/OC2SG/KQ.

5.2.2.5 INORMATION RESOURCE MANAGEMENT (GIR)

VALENTINE, JENNIFER R. *Application of the Strategic Alignment Model and Information Technology Governance Concepts to Support Network Centric Warfare.* AFIT/GIR/ENG/06-01, Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

5.2.2.6 SPACE SYSTEMS (GSS)

BADGETT, CHRISTOPHER D. *Performance Evaluation of Automated Digital Modulation Recognition Algorithms.* AFIT/GSS/ENG/06-01, Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/SNRW.

NOBLE, LOUIS A. *Dual Fine Tracking Control of a Satellite Laser Communication.* AFIT/GSS/ENG/06-02, Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: N/A.

5.2.3 GRADUATE RESEARCH PAPERS

BASS, SAMUEL D. *The Challenges of Information Management in the Networked Battlespace: Unmanned Aircraft Systems, Raw Data and the Warfighter.* AFIT/IC4/ENG/06-01, Faculty Advisor: Dr. Guna Seetharaman. Sponsor: N/A.

CHACON, MARK A. *Course Curriculum Development of the Future Cyber Warrior.* AFIT/IC4/ENG/06-02, Faculty Advisor: Dr. Robert Mills. Sponsor: N/A.

JENRETTE, BRIAN J. *Establishing a Communications Officer Force Development Program.* AFIT/IC4/ENG/06-04, Faculty Advisor: Dr. Robert Mills. Sponsor: SAF/XC.

MELLOY, JOHN R. *Wireless Sensor Network Applications for the Combat Air Forces.* AFIT/IC4/ENG/06-05, Faculty Advisor: Dr. Barry Mullins. Sponsor: AFRL/IF.

STOOKEY, DAVID E. *A Notional Battlespace for Simulating and Testing Dynamic Wireless Networks.* AFIT/IC4/ENG/06-06, Faculty Advisor: Maj Scott Graham. Sponsor: N/A.

TRECHTER, JOSEPH. *Information Technology Governance and the Air Force.* AFIT/IC4/ENG/06-07, Faculty Advisor: Dr. Robert Mills. Sponsor: N/A.

WHITE, SAMUEL G., III. *Requirements for Common Bomber Mission Planning Environment.* AFIT/IC4/ENG/06-08, Faculty Advisor: Dr. Robert Mills. Sponsor: B2SG/VA.

WOOLLEY, PAMELA. *Defining Cyberspace as a United States Air Force Mission.* AFIT/IC4/ENG/06-09, Faculty Advisor: Dr. Robert Mills. Sponsor: AF/XP.

5.2.4 FUNDED RESEARCH PROJECTS

CAIN, STEPHEN C.,

"3-D LADAR Resolution Enhancement." Sponsor: AFRL/SN. Funding: $5,481.

FELLOWS, JAMES A., Lt Col

"Nanotechnology Three-Dimensional Memory for Cognitive Computer Architecture." Sponsor: AFRL/AFOSR. Funding: $25,995.

GODA, MATTHEW E., Lt Col

"AFOSR BAA 2001-8, High-Energy Laser (HEL) Multi-Disciplinary Research Initiative (MRI)." Sponsor: AFRL/AFOSR. Funding: $44,546.

"Directed Energy Imaging and Atmospheric Propagation Support." Sponsor: AFRL/DE. Funding: $15,000.

"Directed Energy Imaging and Atmospheric Propagation Support." Sponsor: AFRL/DE. Funding: $25,000.

"Synthetic Aperture Image Construction for Next Generation Laser Imaging and Ranging Systems: Phase 2." Sponsor: SAF/FMBMB-AFOY. Funding: $59,626.

GRAHAM, SCOTT R., Maj

"Effective Utilization of Hybrid Communication Networks for Adaptive Military and Commercial Infrastructure". Sponsor: AFOSR/MOA. Funding: $28,715. [ANT]

HALE, TODD B., Maj

"Technical Support, AFRL/SNRT." Sponsor: AFRL/SN. Funding: $10,000

HALLORAN, TIMOTHY J., Lt Col

"Towards Practical Late-Lifecycle Verification of Software: Analysis, Interaction and Fusion." Sponsor: AFRL/AFOSR. Funding: $12,162.

HAVRILLA, MICHAEL J.,

"Investigation on Coupling Direct Simulation Monte Carlo and Continuum CFD Solvers." Sponsor: AFRL/VA. Funding: $44,074.

HOPKINSON, KENNETH M.,

"Effective Utilization of a Hybrid Communication Network". Sponsor: SAF/FMBMB-AFOY. Funding: $46,258. [ANT]

"HPC Summer Intern Support." Sponsor: DoD (High Performance Computing Modernization Office). Funding: $42,000.

KIM, YONG C.,

"Innovative Space Missions." Sponsor: AFRL/VS. Funding: $30,000.

MARTIN, RICHARD K.,

"Reception of Non-Cooperative Cyclic-Prefixed Wireless Communications." Sponsor: AFRL/AFOSR. Funding: $32,836.

MAYBECK, PETER S.,

"Cost-Function-Based Gaussian Mixture Reduction Applied to Target Tracking." Sponsor: AFRL/AFOSR/NM. Funding: $50,000.

MILLS, ROBERT F.,

"Insider Threat Mitigation". Sponsor: NSA. Funding: $10,000. [CISER]

"Technical Support, RF Sensing Applications". Sponsor: AFRL/SN. Funding: $15,000. [CISER]

"Technical Support, RF Sensing Applications". Sponsor: AFRL/SN. Funding: $13,000. [CISER]

MULLINS, BARRY E.,

"Air Force Communication Systems Modeling". Sponsor: AFCA. Funding: $64,000. [CISER]

"Investigation of Wireless Sensor Network Research to Department of Defense Applications". Sponsor: AFRL/IF. Funding: $43,000. [CISER]

"Secure Communication in a Mobile Wireless Network Environment". Sponsor: NIETP. Funding: $144,281. [CISER]

"Technical Support: Ground Mobile Objective Gateways". Sponsor: AFRL/MN. Funding: $49,000. [ANT]

PACHTER, MEIR,

"Cooperative Control and Estimation." Sponsor: AFRL/AFOSR. Funding: $41,220.

"Optimization of MAV Operations". Sponsor: AFRL/VACA. Funding: $22,000. [ANT]

RAINES, RICHARD A.,

"Development of a Federal Cyber Force at the Air Force Institute of Technology". Sponsor: NSF. Funding: $90,609. [CISER]

"Collaborative Project -- AFIT and Sinclair Community College: Building Core IA Educational Capacity". Sponsor: NSF. Funding: $69,121. [CISER]

"Tuition and Resource Support for the AFIT Center for Information Security Education and Research (CISER)". Sponsor: NSA. Funding: $342,682. [CISER]

"Development of a Federal Cyber Force at the Air Force Institute of Technology". Sponsor: NSF. Funding: $268,426. [CISER]

RAQUET, JOHN F.,

"Alternative Navigation Techniques". Sponsor: AFRL/MN. Funding: $50,000. [ANT]

"ANT Center and Laboratory Support per Appendix of the MOA between AFIT and AFRL". Sponsor: AFRL/SN. Funding: $58,000. [ANT]

"ANT Center and Laboratory Support per Appendix of the MOA between AFIT and AFRL". Sponsor: AFRL/SN. Funding: 81,956. [ANT]

ANT Center and Laboratory Support per Appendix of the MOA between AFIT and AFRL". Sponsor: AFRL/SN. Funding: $12,166. [ANT]

"CANIS-Related Navigation Research Projects for the ANT Laboratory". Sponsor: AFRL/SN. Funding: $93,000. [ANT]

"Geostationary Satellite Positioning using Two-Way Time Transfer and GPS". Sponsor: SAF/FMBMB-AFOY. Funding: $45,120. [ANT]

"Initial JPALS TSPI System Development". Sponsor: 746TS. Funding: $30,000. [ANT]

"Overcoming Geometric Deficiencies in Pseudolite Navigation Systems". Sponsor: AFOSR. [ANT] Funding: $98,591.

"Sub-Surface Navigation". Sponsor: AFRL/SN. Funding: $67,636. [ANT]

SEETHARAMAN, GUNA S.,

"Enhancements and Extensions to VSIPL++: Interface, Effectiveness and Testability." Sponsor: AFRL/IF. Funding: $50,000.

STARMAN, LaVERN A., Maj

"Autonomous Power-Scavenging Microrobots." Sponsor: AFRL/MN. Funding: $25,000.

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TEMPLE, MICHAEL A.,

"Detection, Characterization and Location of Spurious Receiver Emissions". Sponsor: SAF/FMBMB-AFOY. Funding: $43,865. [ANT]

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"Phase II Technical Support, RF Sensor Technology Division." Sponsor: AFRL/SN. Funding: $15,000.

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"Technical Support: RF-EW Systems". Sponsor: AFRL/SN. Funding: $90,000. [ANT]

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"ECM Against Passive Radar." Sponsor: AFRL/SN. Funding: $33,000

"Remote Sensing and Communications for MASINT". Sponsor: NASIC/DE. Funding: $100,000

VASQUEZ, JUAN R., Lt Col

"ATR Fusion for Identity Experiment: Tracking, Classification, and Estimation". Sponsor: AFRL/SN. Funding: $40,000. [ANT]

"Target Tracking for the Missile Defense Agency." Sponsor: MDA/BCA. Funding: $40,000.

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RAINES, RICHARD A.,

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5.2.10 BOOKS AND CHAPTERS IN BOOKS

MILLS, ROBERT F.

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5.2.12 OTHER SIGNIFICANT PROFESSIONAL ACTIVITIES

BALDWIN, RUSTY O.,

Faculty Advisor: Local Chapter of Eta Kappa Nu Honor Society

Reviewer: *IEEE Computer; International Conference on Computer Communications and Networks; The Journal of Systems and Software;* and *Transactions on Mobile Computing*

CAIN, STEPHEN C.,

Session Chair for the 2006 IEEE Aerospace Conference

Session Organizer for the 2007 IEEE Aerospace Conference

COLLINS, PETER J.,

Chair: AFIT/ENG Low Observables Curriculum Committee

Member: AFIT Commandant's Advisory Committee on Air Force Emerging Technical Competencies and Educational Requirements

Reviewer: *IEEE Transactions on Antennas and Propagation*, and *IEEE Transactions on Instrumentation and Measurement*

FELLOWS, JAMES A., Lt Col

Member: AFIT/ENG Steering Committee; AFIT/ENG Faculty Search Committee

Proposal Reviewer: Army Research Office (ARO)

Consultant: Nanotechnology SME to "Horizons 21" Air War College study group

GUSTAFSON, STEVEN C.,

Chair: ENG Curricullum Committee

Representative: EN Curriculum Development and Requirements Committee

Technical Paper Refreee: IEE Electronics Letters, Optical Engineering

HALE, TODD B., Maj

Tau Beta Pi Faculty EE Advisor: Tau Beta Pi

Technical Paper Referee: *IEE Electronic Letters; IEE Proceedings on Communication; IEE Proceedings: Radar, Sonar & Navigation; IEEE Transactions on Aerospace & Electronic Systems (AES);* and *IEEE Signal Processing Letters*

Tutorial Program Chair: 2006 Waveform Diversity and Design Conference Committee

Consultant: National Air and Space Intelligence Center (NASIC)

HALLORAN, TIMOTHY J., Lt Col

Program Committee Member: *Specification and Verification of Component-Based Systems (2006)*

HAVRILLA, MICHAEL J.,

Session Chair, "Material Design, Measurement and Instrumentation", Antenna Measurement Techniques Association (AMTA) Conference, Newport, RI, November 2005.

Reviewer for IEEE Transactions on Microwave Theory and Techniques, IEEE Transactions on Instrumentation and Measurement

Invited to teach at the "High Power Microwave Short Course," College Park, MD, April 2006

AFIT Electromagnetics Curriculum Chair and AFIT Low Observables Curriculum Chair

HOPKINSON, KENNETH M.,

Reviewer: AFOSR Proposal; IEEE Power Engineering Letters; Acta Press / IASTED Journal of Control and Intelligent Systems; IEE Proceedings of Control Theory and Applications

KIM, YONG CHANG,

Program Committee Member: IEEE International Symposium on Circuits and Systems (ISCAS)

Review Committee Member: IEEE International Symposium on Circuits and Systems (ISCAS)

Reviewer: IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems; IEEE Transactions on VLSI Systems; and International Symposium on VLSI Design

LAMONT, GARY B.,

Member: Executive Committee, AFIT Tau Beta Pi Executive Committee 1992 to present

Journal of Evolutionary Computation, MIT Press 2001 to present

IEEE Transactions on Evolutionary Computation, 2000 to present

MARTIN, RICHARD K.,

Technical Paper Referee: *IEEE Communications Letters; IEEE Transactions on Signal Processing; IEEE Signal Processing Letters; IEEE Transactions on Communications; IEEE Transactions on Wireless Comm; IEEE Transactions on Circuits and Systems II; EURASIP Journal of Applied Signal Processing; Communications in Information and Systems; The 2006 IEEE Int. Conf. on Comm; The 2007 IEEE Int. Conf. on Comm.; The Fall 2006 IEEE Vehicular Tech. Conf; The Spring 2007 IEEE Vehicular Tech Conf.; The 2006 IEEE Int. Symp. on Personal, Indoor, and Mobile Radio Comm.; and the Handbook of Computer Networks (John Wiley & Sons, 2006)*

Student Branch Advisor: AFIT IEEE, Oct. 2005 – Aug. 2006

MAYBECK, PETER S.,

Chair: AFIT/ENG Academic Rank Promotion and Tenure Committee, and AFIT/ENG Guidance and Control Curriculum Committee

Member: AFIT/EN Academic Rank Promotion and Tenure Committee; AFIT/ENG Steering Committee; AFIT/ENG Faculty Search Committee; AFIT/EN Scheduling/Registration Faculty Committee; AFIT/EN Academic Support Committee; and AFIT/EN Classified Research at AFIT Committee

Representative: AFIT/EN Doctoral Council, AFIT/ENG

MILLS, ROBERT F.,

Technical Paper Referee: *IEEE Transactions on Communications*, Aug 2006

Reviewer: 2006 IEEE Vehicular Technology Conference, Transmission Technology track

Reviewer, NASA Advanced Information Systems Technology Program, Earth Sciences Technical Office, April 2006

Consultant: AFRL/SNRW (Electronic Warfare Branch), close in urban spectrum sensing

MULLINS, BARRY E.,

Technical Paper Referee: Military Communications Conference (MILCOM 2006) and American Society for Engineering Education Annual Conference

Moderator: American Society for Engineering Education Annual Conference

PACHTER, MEIR,

Faculty Research Council

DAGSI Program Coordinating Committee (Control and Signal Processing)

Associate Editor of the Journal of Optimization Theory and Applications

Session Chairman: *Mediterranean Control Conference, June 27-29, 2005, Limassol, Cyprus*
AIAA Guidance, Navigation and Control Conference, San Francisco, CA, August 15-18, 2005
IEEE Conference on Decision and Control, Seville, Spain, December 12-15, 2005
International Society of Dynamic Games, July 3-6, 2006, Sophia Antipolis, France

Member of the following professional societies: IEEE, AIAA and ION; member of the IEEE committee "Engineers at Risk"

Reviewer for IEEE Transactions on Automatic Control

Reviewer for AIAA J. of Guidance, Control and Dynamics

Reviewer for International Journal of Control

AFIT liaison to AFRL/VA

Member of AFOSR Review Panel

Consultant to AFRL/VACA, AFRL/SNAT and AFRL/SNRP

Member of AFRL/VACA AFOSR *Star Team*

AFIT NRC Postdoctoral Advisor

Associate Fellow of the AIAA

Fellow of the IEEE

PETERSON, GILBERT L.,

Reviewer: Florida Artificial Intelligence Research Society (FLAIRS); IFIP WG 11.9 Digital Forensics; and Digital Forensic Research Workshop (DFRWS); IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS); *IEEE Transactions on Systems, Man, and Cybernetics - Part B*; *Information Sciences*

Session Chairman: IFIP WG 11.0 Digital Forensics

RAINES, RICHARD A.,

Member: Program Committee, 10th Colloquium for Information Systems Security Education (CISSE), Maryland, June 2006

Panel Member: Scholarship for Service Proposal Review, National Science Foundation, Arlington VA, February 2006

Technical Paper Referee: *IEEE International Communications Conference; 40th Hawaii International Conference on System Sciences; IEEE Information Assurance Workshop;* 10th Colloquium for Information Systems Security Education (CISSE); *IEEE Security and Privacy; IEEE Communications Letters*

RAQUET, JOHN F.,

Session chair: *ION GNSS-2006, 2006 Joint Navigation Conference, 2006 IEEE/ION PLANS, 2006 ION National Technical Meeting*

Reviewer: *IEEE Transactions on Aerospace Electronics Systems; GPS Solutions*

Executive Secretary: Satellite Division of the Institute of Navigation

SEETHARAMAN, GUNA S.,

Charter Member: Team CajunBot, a finalist in DARPA Grand Challenge, October 2005. Obstacle Detection Algorithms development for CajunBot

Member: Steering Committee and Program Committee, IEEE Eighth International Workshop on Computer Architecture for Machine Perception and Sensing (CAMPS); Montreal, Canada, Sep 2006; Program Committee, International Computer Vision, International Conference on Computer Vision (ICCV) October 2005 Bejing, China; Program Committee, International Conference on Realtime and Innovative Applications of Distributed Sensor Networks. Organizing Committee & Co-Chair of Publicity; IEEE International Conference on Sensor Networks, Ubiquitous and Trusted Computing, June 2006, Taiwan, IEEE-SUTC2006

Reviewer for the following journals: The IEEE Transactions on Computer; Intl Journal of Distributed Parallel Computing; Photogrammetry and Remote Sensing and, Optics Express.

STARMAN, LaVERN A., Maj

Program Co-Chair and Session Chair: SPIE Great Lakes Photonics Symposium, Dayton, OH, Jun 2006

TEMPLE, MICHAEL A.,

Reviewer: *IEEE Journal in Selected Areas of Communications; IEEE Communications Letters; IEE Electronic Letters; and IEEE Journal in Selected Areas of Communications*

Member: AFRL Technology Review Board (TRB), Senior Member of IEEE

TERZUOLI, ANDREW J., Jr

Chair: Local Chapter, Joint IEEE Societies Antennas and Propagation Society (APS), Microwave Theory and Techniques (MTT), Geoscience and Remote Sensing (GRS)

Technical Paper Referee: *IEEE Transactions, IEE Proceedings*

Steering Committee: WPAFB MASINT Development Consortium

5.3 DEPARTMENT OF ENGINEERING PHYSICS

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5.3.1 DOCTORAL DISSERTATIONS

HAWKS, MICHAEL R. *Passive Ranging Using Atmospheric Oxygen Absorption Spectra.* AFIT/DS/ENP/06-02, Faculty Advisor: Dr. Glen P. Perram. Sponsor: NASIC/DEM.

GRIMES, BRENT W. *Multiple Channel Laser Beam Combination and Phasing Using Stimulated Brillouin Scattering in Optical Fibers.* AFIT/DS/ENP/06-01, Faculty Advisor: Dr. Won Roh. Sponsor: AFRL/DELO.

PHILLIPS, GRADY T. *Spatially-Resolved Temperature Diagnostic for Supersonic Flow Using Cross-Beam Doppler-Limited Laser Saturation Spectroscopy.* AFIT/DS/ENP/06-03 Faculty Advisor: Dr. Glen P. Perram. Sponsor: N/A

5.3.2 MASTERS THESES

5.3.2.1 APPLIED PHYSICS (GAP)

BROWN, KIRK C. *Passive Multiple Beams Combination in Optical Fibers via Stimulated Brillouin Scattering.* AFIT/GAP/ENP 06-01, Faculty Advisor: Maj Timothy Russell. Sponsor: AFRL/DELO.

CHARLES, CHRISTOPHER S. *Computational Modeling of the Dielectric Barrier Discharge (DBD) Device for Aeronautical Applications.* AFIT/GAP/ENP/06-02, Faculty Advisor: Dr. William F. Bailey. Sponsor: N/A.

FLUSCHE, BRIAN M. *Development of a Multiple Beam Combiner Using Stimulated Raman Scattering in Multimode Fiber.* AFIT/GAP/ENP/06-04, Faculty Advisor: Lt Col Thomas Alley. Sponsor: AFRL/DELO.

GALLAGHER, JEFFREY E. *Singlet Delta Oxygen: A Quantitive Analysis Using Off-Axis Integrated-Cavity-Output-Spectroscopy (ICOS).* AFIT/GAP/ENP/06-06, Faculty Advisor: Dr. Glen P. Perram. Sponsor: AFRL/PRAS.

GRAVELY, LIESEBET E. *Comparison of Climatological Optical Turbulence Profiles of Standard, Statistical and Numerical Modes using HELEEOS.* AFIT/GAP/ENP/06-06, Faculty Advisor: Lt Col Steven Fiorino. Sponsor: NA.

KLEIN, TIMOTHY R. *Macroscopic Computational Model of Dielectric Barrier Discharge Plasma Actuators.* AFIT/GAP/ENP/06-07, Faculty Advisor: Dr. William Bailey. Sponsor: N/A.

LEMERY, JADE M. *Electro-Optic Sensor Detection Via Optically Augmented Retroflection.* AFIT/GAP/ENP/06-08, Faculty Advisor: Dr. Michael Marciniak. Sponsor: AFRL/MLPJ.

LIEVJEN, KATHERINE B. *Radiometric Analysis of Daytime Satellite Detection*. AFIT/GAP/ENP/06-09, Faculty Advisor: Dr. Michael Marciniak. Sponsor: AFRL/SNJW.

MEYER, JOSHUA W. *Optical Parametrical Oscillator Design Using Thick Growth Orientation-Patterned Gallium Arsenide.* AFIT/GAP/ENP/06-10, Faculty Advisor: Lt Col Matthew Bohn. Sponsor: AFRL/SNJW.

MORGAN, JESSE D.S. *Backward Amplification and Beam Cleanup of a Raman Fiber Laser Oscillator a Multi-Mode Graded Index Fiber Amplifier.* AFIT/GAP/ENP/06-11, Faculty Advisor: Lt Col Thomas Alley. Sponsor: AFRL/DELO.

MULLER, PAUL L. *A Study of Collapse Events in Ultraviolet Light Filaments Due to Transient Edge Effects.* AFIT/GAP/ENP/06-12, Faculty Advisor: Capt Thomas Niday. Sponsor: AFOSR/NM.

NORMAN, JAMES D. *Characterization of Optical Blooming in Indium Antimonide Focal Plane Arrays Under High Irradiance Conditions.* AFIT/GAP/ENP/06-13, Faculty Advisor: Dr. Michael Marciniak. Sponsor: AFRL/MLPJ.

PARSON, ANNETTE M. *Modeling E & F Region Response to X-Ray Solar Flares.* AFIT/GAP/ENP/06-14, Faculty Advisor: Maj Christopher Smithro. Sponsor: AFWA/DN.

SATTLER, MATTHEW P. *Prediction of Flight-Level Radiation Hazards due to Solar Energetic Particles.* AFIT/GAP/ENP/06-15, Faculty Advisor: Maj Christopher Smithro. Sponsor: AFWA/DN.

SCOVILLE, JAMES A. *Type II Quantum Computing Algorithm for Computational Fluid Dynamics.* AFIT/GAP/ENP/06-17, Faculty Advisor: Dr. David Weeks. Sponsor: AFRL/SBYA.

SIEFERT, NICHOLAS S. *Shockwave Interactions with Argon Glow Discharges.* AFIT/GAP/ENP/06-18, Faculty Advisor: Dr. William Bailey. Sponsor: N/A.

STEWART, BRYAN J. *Reproductability, Distinguishability, and Correlation of Fireball and Shockwave Dynamics in Explosive Munitions Detonations.* AFIT/GAP/ENP/06-19, Faculty Advisor: Dr. Glen Perram. Sponsor: NASIC/DEMI.

WARREN, TREVOR W. *Characterization of Detonation Phenomena Observed in High-Speed, Visible Imagery.* AFIT/GAP/ENP/06-20, Faculty Advisor: Dr. Glen Perram. Sponsor: NASIC/DEMI.

WILLIAMS, AARON J. *Prediction of the Temporal Evolution of Solar X-Ray Flares.* AFIT/GAP/ENP/06-21, Faculty Advisor: Maj Christopher Smithro. Sponsor: AFWA/DN.

5.3.2.2 ELECTRO-OPTICS (GEO)

CLARK, JEFFERY D. *Characteristics of Two-Dimensional Triangular and Three-Dimensional Face-Centered-Cubic Photonic Crystals.* AFIT/GEO/ENP/06-01, Faculty Advisor: Dr. Michael Marciniak. Sponsor: N/A.

PARADA, FRANCISCO E. *Characterization of Stress in GaN-on-Sapphire Microelectromechanical Systems (MEMS) Structures Using Micro-Raman Spectroscopy.* AFIT/GEO/ENP/06-02, Faculty Advisor: Dr. Michael Marciniak. Sponsor: AFRL/MNMF.

TAYLOR, CATHERINE ANN. *Characterization of Passivated Indium Antimonide.* AFIT/GEO/ENP/06-03, Faculty Advisor: Dr. Michael Marciniak. Sponsor: N/A.

5.3.2.3 NUCLEAR ENGINEERING (GNE)

DENTON, JAMES L. *Optimizing the Destruction of Chemical and Biological Munitions Stockpiles using Conventional Weapons while Minimizing Collateral Damage via Weather Exploitation.* AFIT/GNE/ENP/06-01, Faculty Advisor: Lt Col Steven Fiorino. Sponsor: NA.

HOBBS, EDWARD L. *Efficient and Accurate Computation of Elastic Cross Sections in the Single-Level Breit-Wigner Resonance Region.* AFIT/GNE/ENP/06-02, Faculty Advisor: Maj David W. Gerts. Sponsor: N/A.

KIM, WON S. *Determining Source and Shield/Scatter Geometry Using Spectra Collected from a Portable High Purity Germanium Detector.* AFIT/GNE/ENP/06-03, Faculty Advisor: Dr. Larry Burggraf. Sponsor: Defense Threat Reduction Agency.

MCHALE, STEPHEN, R. *Development of a Three-Dimensional Air Blast Propagation Model Based Upon the Weighted Average Flux Method.* AFIT/GNE/ENP/06-04, Faculty Advisor Dr. Kirk A. Matthews. Sponsor: N/A.

OVERBEEK, ROBERT J. *The Sensitivity of Radioactive Fallout Predictions to Source Term Parameters.* AFIT/GNE/ENP/06-05, Faculty Advisor: Dr. Charles J. Bridgman. Sponsor: Defense Threat Reduction Agency.

PACE, KEVIN D. *Terrain and Spatial Effects on Hazard Prediction and Assessment Capability (HPAC) Software Dose-Rate Contour Plot predictions as Compared to a Sample of Local Fallout Data from Test Detonations in the Continental United States, 1945-1962.* AFIT/GNE/ENP/06-06m, Faculty Advisor: Lt Col Steven Fiorino. Sponsor: N/A.

WILLIFORD, RUSSELL S. *High-Altitude Neutron Transport Using a Ray-Integrating Monte Carlo Method.* AFIT/GNE/ENP/06-07, Faculty Advisor: Maj David W. Gerts. Sponsor: AFTAC/TT.

5.3.2.4 SPACE SYSTEMS (GSS)

BELTON, SCOTT L. *The Simulation of Off-Axis Laser Propagation Using HELEEOS.* AFIT/GSS/ENP/06-01, Faculty Advisor: Lt Col Steven Fiorino. Sponsor: N/A.

5.3.3 GRADUATE RESEARCH PAPERS

BAUER, KURT P., II. *Using Remote Sensing for Nuclear Event Attribution.* AFIT/ILM/ENP/06-01, Faculty Advisor: Dr. James Petrosky. Sponsor: N/A.

5.3.4 FUNDED RESEARCH PROJECTS

ALLEY, THOMAS G., Lt Col

"Nonlinear Optical Effects in Fibers and Their Applications to High Energy Lasers". Sponsor: AFRL/DE. Funding: $90,000. [CDE]

BOHN, MATTHEW J., Lt Col

"Optical Diagnostics for the Production of Carbon Nanotubes from PLD". Sponsor: AFOSR. Funding: $30,580. [CDE]

BURGGRAF, LARRY W.,

"Quantum Mechanical Prediction of Positron Spectroscopy for Silicon Carbide Vacancy Defects using NEO/GAMESS." Sponsor: AFRL/AFOSR. Funding: $38,822.

"Role of Water in Heat Inactivation of Bacillus Anthracis Spores and Spores of Related Organisms." Sponsor: NWCA/AT. Funding: $60,000.

CUSUMANO, SALVATORE J.,

"Delivered Irradiance Assessment Tool (DIAT)". Sponsor: U.S. ARMY/Directed Energy Test and Evaluation Capability (DETEC). Funding: $191,000. [CDE]

"Robust Characterization of DEW Weapons: HELEEOS Intel". Sponsor: NASIC. Funding: $75,000. [CDE]

"Subject Matter Expert (SME) Consultation to Air Force Flight Test Center -Airborne Laser". Sponsor: 412 TW/DRP. Funding: $30,000. [CDE]

FIORINO, STEVEN T., Lt Col

"HELEEOS-based Laser Propagation Module for AFRL Wargaming Simulation Software". Sponsor: AFRL/VA. Funding: $30,000. [CDE]

"Probabilistic HELEEOS Atmospheric Information for AFRL Weather Impact". Sponsor: AFRL/VA. Funding: $31,198. [CDE]

"Weather and Terrain Sensitivities of Joint Precision Airdrop System (JPADS)." Sponsor: US Army Research, Development and Engineering Command. Funding: $10,000.

GERTS, DAVID W., Maj

"Neutral Particle Transport for High Altitude Nuclear Detonation." Sponsor: AFTAC. Funding: $26,000.

LaGRAFFE, DAVID A., LTC

"DTRA/AFIT Nuclear Partnership." Sponsor: DTRA. Funding: $90,000.

MARCINIAK, MICHAEL A.,

"Infrared Counter-Countermeasure Research". Sponsor: AFRL/ML. Funding: $25,000. [CDE]

"Infrared Optical Signature Measurement Research". Sponsor: AFRL/SN. Funding: $6,090. [CDE]

"Infrared Optical Signature Measurement Research". Sponsor: AFRL/SN. Funding: $30,000. [CDE]

"Stress Analysis of Silicon Carbide (SiC) Micro-Electromechanical Systems (MEMS) Fuses using Raman Spectroscopy." Sponsor: AFRL/MN. Funding: $3,000.

"Stress Analysis of Silicon Carbide (SiC) Micro-Electromechanical Systems (MEMS) Fuses using Raman Spectroscopy." Sponsor: AFRL/MN. Funding: $3,500.

"Time-Resolved Luminescence Spectroscopy to Determine Carrier Dynamics in Mid-Infrared Semiconductor Quantum Well Opto-Electronic Devices for Air Force Applications". Sponsor: AFRL/AFOSR. Funding: $54,563. [CDE]

MATHEWS, KIRK A.,

"AFTAC/TM -AFIT/ EN MOA 2006 Research." Sponsor: AFTAC/TM. Funding: $50,000.

NIDAY, THOMAS A., Capt

"Modeling and Simulation of the Dynamics and Applications of Light Filaments". Sponsor: AFOSR/MOA. Funding: $11,391. [CDE]

PERRAM, GLEN P.,

"Closed Cycle Chemical Laser: ElectriCOIL". Sponsor: AFOSR/NL. Funding: $81,1058. [CDE]

"High Energy Laser Weapons: Modeling and Simulation. Phase III Apply M&S Capabilities to Weapon and Battlefield Effectiveness". Sponsor: High Energy Laser Joint Technology Office. Funding: $460,000. [CDE]

"Lineshape and Collisional Dynamics of Hyperfine and Magnetically-Split Cs (2P1/2,3/2) for the Optically-Pumped Cesium Laser". Sponsor: AFRL/DE. Funding: $30,000. [CDE]

"Near Infrared Radiometric Signatures of Flashless Gunpowder". Sponsor: Navy. Funding: $35,000. [CDE]

"Support for Establishment of an IPA Appointment to Lead Gas Phase Laser Research Effort Collaboration between AFIT and University, Government and Industry Partners". Sponsor: AFRL/DE. Funding: $95,472. [CDE]

"Technical and Administrative Support for the AFOSR Center of Excellence in High Power Gas Phase Electric and Hybrid Lasers". Sponsor: AFRL/DE. Funding: $120,000. [CDE]

SMITHRO, CHRISTOPHER G., Maj

"Observation and Modeling of the Mid-Latitude E- and F-Region Ionosphere during Solar X-Ray Flares." Sponsor: AFRL/AFOSR. Funding: $5,265.

YEO, YUNG KEE,

"Electrical and Optical Activation Studies of Acceptor Ion Implanted Wide Bandgap Semiconductors." Sponsor: AFRL/AFOSR. Funding: $30,000

"Magnetic Properties of Cr- and Mn-implanted GaN." Sponsor: AFRL/AFOSR. Funding: $100,000.

5.3.5 FUNDED EDUCATIONAL PROJECTS

CUSUMANO, SALVATORE J.,

"2006 Directed Energy Summer Scholars Program, A Companion Program of the AFIT E2S2I Summer Internship Program". Sponsor: Directed Energy Professional Society Educational Committee. Funding: $30,000. [CDE]

PERRAM, GLEN P.,

"High Energy Laser Weapons Systems Short Course." Sponsor: DEPS Educational Committee. Funding: $17,500. [CDE]

TUTTLE, RONALD F.,

"Advanced Geospatial Intelligence Education". Sponsor: National Geospatial-Intelligence Agency. Funding: $375,000. [CMSR]

"Advanced Geospatial Intelligence Education". Sponsor: National Geospatial-Intelligence Agency. Funding: $375,000. [CMSR]

"MASINT Academic Support". Sponsor: NASIC. Funding: $100,000. [CMSR]

5.3.6 REFEREED JOURNALS

BURGGRAF, LARRY W.,

*Zolock, Ruth A., Guangming Li, Charles Bleckmann, Larry W. Burggraf, Douglas C. Fuller, "Atomic force microscopy of Bacillus spore surface morphology", Micron 37 363-369 (2006).

FIORINO, STEVEN T., Lt Col

Fiorino, S. T., E.A. Smith, 2006: Critical Assessment of Microphysical Assumptions within TRMM-Radiometer Rain Profile Algorithm Using Satellite, Aircraft & Surface Datasets from KWAJEX. *J. Applied Meteor. & Clim.* Vol 45, No. 5, pp. 754-786.

Fiorino, S.T., R.J. Bartell, G.P. Perram, D.W. Bunch, L.E. Gravley, C.A. Rice, Z.P. Manning, and M.J. Krizo, 2006: The HELEEOS Atmospheric Effects Package: A Probabilistic Method for Evaluating Uncertainty in Low-Altitude High Energy Laser Effectiveness. *J. Dir Energy*, Vol 1, No. 4, pp. 347-359. [CDE]

JOHN, GEORGE,

Phillips, B. S., G. John, and J.S. Zabinski "Surface Chemistry of Fluorine Containing Ionic Liquids on Steel Substrates at Elevated Temperatures Using Mossbauer Spectroscopy", *Tribology Letters (2006), in press.* (AFMRL)

HENGEHOLD, ROBERT L.,

*Ryu, M.Y., Y.K. Yeo, M.A. Marciniak, T.W. Zens, E.A. Moore, R.L. Hengehold, and T.D. Steiner, "Electrical and optical characterization studies of lower dose Si-implanted $Al_xGa_{1-x}N$," *Journal of Electronic Materials*, Vol. 35, pp. 647-653 (2006). [CDE]

*Ryu, M.Y., Y.K. Yeo, M.A. Marciniak, and R.L. Hengehold "Electrical and optical activation studies of high dose Si-implanted $Al_{0.18}Ga_{0.82}N$," *Solid State Communication*, Vol. 139, pp. 284-288 (2006). [CDE]

*Ryu, M.Y., Y.K. Yeo, T.W. Zens, M.A. Marciniak, R.L. Hengehold, and T.D. Steiner, "Electrical characterization of Si-ion implanted $Al_xGa_{1-x}N$ annealed at lower temperatures," *Physical Status Solid (a)*, Vol 203, pp. 1650-1653 (2006).

*Raley, J.A., Y.K. Yeo, R.L. Hengehold, M.Y. Ryu, and T. D. Steiner, "Room temperature ferromagnetic properties of transition metal implanted $Al_{0.35}Ga_{0.65}N$," *Journal of Alloys and Compounds*, Vol. 423, pp. 184-187 (2006).

MARCINIAK, MICHAEL A.,

*M.-Y. Ryu, Y.K. Yeo, T.W. Zens, M.A. Marciniak, R.L. Hengehold and T.D. Steiner, "Electrical characterization of Si-ion implanted $Al_xGa_{1-x}N$ annealed at lower temperatures," Phys. Stat. Sol. (a) 203(7), 1650 (2006). [CDE]

*M.-Y. Ryu, Y.K. Yeo, M.A. Marciniak, T.W. Zens, E.A. Moore, R.L. Hengehold, and T.D. Steiner, "Electrical and optical characterization studies of lower dose Si-implanted $Al_xGa_{1-x}N$," Journal of Electronic Materials, 35(4), 647 (2006). [CDE]

T.A. Morris, M.A. Marciniak, G.C. Wollenweber and J.A. Turk, "Analysis of uncertainties in infrared camera measurements of a turbofan engine in an altitude test cell," Infrared Physics and Technology, 48, 130 (2006).

NIDAY, THOMAS A., Capt

*Yang, S.H.,, D.E. Weeks, and T.A. Niday, "Inelastic Scattering Matrix Elements, Cross Sections, and Rate Constants for Transition B(2P1/2) + H2(j = 0)□B(2P3/2) + H2(j = 0)," Chem. Phys. Letters 410 316-320 (2005).

SMITHTRO, CHRISTOPHER G., Maj

Smithtro, C., J.J. Sojka, T. Berkey, D. Thompson, and R.W. Schunk, "Anomalous F-region Response to Moderate Solar Flares", *Radio Sci.*, 41, RS5S03, doi:10.1029/2005RS003350, 2006.

WEEKS, DAVID E.,

Yang, S.H., D.E. Weeks, and T.A. Niday, "Inelastic Scattering Matrix Elements, Cross Sections, and Rate Constants for Transition B(2P1/2) + H2(j = 0) B(2P3/2) + H2(j = 0)," Chem. Phys. Letters 410, 316-320 (2005).

YEO, YUNG KEE,

*Kucko, J.F., J.C. Petrosky, J.R. Reid, and Y.K. Yeo "Non-charge related mechanism affecting capacitive MEMS switch lifetime," *IEEE Microwave and Wireless Components Letters*, Vol. 16, pp. 140-142 (2006).

*Raley, J.A., Y.K. Yeo, R.L. Hengehold, M.Y. Ryu, and T. D. Steiner, "Room temperature ferromagnetic properties of transition metal implanted $Al_{0.35}Ga_{0.65}N$," *Journal of Alloys and Compounds*, Vol. 423, pp. 184-187 (2006).

*Ryu, M.Y., Y.K. Yeo, M.A. Marciniak, T.W. Zens, E.A. Moore, R.L. Hengehold, and T.D. Steiner, "Electrical and optical characterization studies of lower dose Si-implanted $Al_xGa_{1-x}N$," *Journal of Electronic Materials*, Vol. 35, pp. 647-653 (2006). [CDE]

*Ryu, M.Y., Y.K. Yeo, T.W. Zens, M.A. Marciniak, R.L. Hengehold, and T.D. Steiner, "Electrical characterization of Si-ion implanted $Al_xGa_{1-x}N$ annealed at lower temperatures," *Physical Status Solid (a)*, Vol 203, pp. 1650-1653 (2006). [CDE]

*Ryu, M.Y., Y.K. Yeo, M.A. Marciniak, and R.L. Hengehold "Electrical and optical activation studies of high dose Si-implanted $Al_{0.18}Ga_{0.82}N$," *Solid State Communication*, Vol. 139, pp. 284-288 (2006). [CDE]

Wu, P, G. Saraf, Y. Lu, D. Hill, R. Gateau, L.S. Wielunski, R.A. Bartynski, D.A. Arena, J. Dvorak, A. Moodenbaugh, T. Siegrist, J.A. Raley, and Y.K.Yeo, "Ferromagnetism in Fe-implanted a-plane ZnO Films," *Applied Physics Letters*, Vol. 89, pp. 012508-012510 (2006).

5.3.7 OTHER PUBLICATIONS

ALLEY, THOMAS G., Lt Col

Terry, N.B., T.G. Alley, and W.B. Roh, "Brightness conversion using a Raman fiber laser based on a multimode fiber," Advanced Solid State Photonics 2006 Topical Meeting Conference Program and Technical Digest, MB-15 (2006). [CDE]

*Grime, B.W., W.B. Roh, and T.G. Alley, "Beam phasing multiple fiber amplifiers using a fiber phase conjugate mirror," Fiber Lasers III: Technology, Systems, and Applications, A.J.W. Brown, J. Nilsson, D.J. Harter, A. Tunnermann eds., SPIE Proc. 6102 (2006). [CDE]

BUNKER, DAVID J.,

*Tuttle, Ronald F., Adam Talkington and David J. Bunker, "Using Visual Interactive Site Analysis Code (VISAC) Predictives for Post-Attack Signature Database Development to Aid in the Functional Defeat of a Foreign Nuclear Power Plant," MASINT Signatures Technology Symposium, Chantilly, VA 12-13 Sep 2005. [CMSR]

FIORINO, STEVEN T., Lt Col

Fiorino, S.T., Bartell, R.J., G.P. Perram, M.J. Krizo, L.E. Gravley, T.P. Huster, J.P. Cheney, and K.B. Le, "Expected Worldwide Laser Performance in Spectrally Diverse Near Earth Scenarios in the Presence of Common Atmospheric Obscurants" Proceedings of the Military Sensing Symposium, Monterey, CA, September 2006. [CDE]

Belton, S.L., S.T. Fiorino, R.J. Bartell, and M.J. Krizo, "The Simulation of Off-Axis Laser Propagation Using HELEEOS" Proceedings of the Military Sensing Symposium, Monterey, CA, September 2006. [CDE]

MARCINIAK, MICHAEL A.,

J.D. Norman, M.A. Marciniak and M.B. Haeri, "Optical blooming effects in indium-antimonide detector arrays under high-flux conditions," *Proceedings of the 2006 Meeting of the Military Sensing Symposium Specialty Group on Infrared Countermeasures*, Paper # E03, Monterey, CA, 25-27 April 2006. [CDE]

J.M. Lemery, M.A. Marciniak, N.J. Abel and S.R. Davidson, "Analysis of electro-optic sensor detection via optically augmented retro-reflections," *Proceedings of the 2006 Meeting of the Military Sensing Symposium Specialty Group on Infrared Countermeasures*, Paper # P04, Monterey, CA, 25-27 April 2006. [CMSR]

J.R. Foley, S.L. Robertson, J.C. Zingarelli and M.A. Marciniak, "Stress analysis of SiC MEMS accelerometers for harsh environments," Final Report (AFRL-MN-EG-TR-2006-7074).

S.A. Uzpen, M.A. Marciniak, J.W. Burks and J.P. Costantino, "Weathering effects on aircraft paint with regard to infrared signature," *Proceedings of the 2006 Meeting of the Military Sensing Symposium Specialty Group on Infrared Countermeasures*, Paper # B05, Monterey, CA, 25-27 April 2006. [CMSR]

S.A. Uzpen, M.A. Marciniak, J.W. Burks and J.P. Costantino, "A measurement-base examination of optical signature changes due to weathering effects on aircraft paint," *Proceedings of 29th Exhaust Plume Technology Subcommittee (EPTS) and 11th SPIRITS User Group*, Littleton, CO, 19-23 June 2006. [CMSR]

ROH, WON B.,

*Terry, N.B., T.G. Alley, and W.B. Roh, "Brightness conversion using a Raman fiber laser based on a multimode fiber," Advanced Solid State Photonics 2006 Topical Meeting Conference Program and Technical Digest, MB-15 (2006). [CDE]

Grime, B.W., W.B. Roh, and T.G. Alley, "Beam phasing multiple fiber amplifiers using a fiber phase conjugate mirror," Fiber Lasers III: Technology, Systems, and Applications, A.J.W. Brown, J. Nilsson, D.J. Harter, A. Tunnermann eds., SPIE Proc. 6102 (2006). [CDE]

TUTTLE, RONALD F.,

Graham, Kathrine M., Ronald F. Tuttle and Jay B. Jordan, "Taming a Wicked Problem: Applying Signatures and Signature Phenomenologies to Reveal Foreign Denial and Deception Programs," Proceedings of the Advanced Signatures Technology Symposium, Air Force Institute of Technology, Wright-Patterson AFB, OH 7-9 Nov 2006. [CMSR]

*Gross, Kevin C., Glen P. Perram and Ronald F. Tuttle, "Phenomenology of Detonation Fireballs and Classification of Explosives," Proceedings of the MASINT Signatures Technology Symposium, Chantilly, VA 12-13 Sep 2005. [CMSR]

Graham, Kathrine M., Ronald F. Tuttle and Jay B. Jordan, "Advanced Cognitive Methodologies for Applying Signature Phenomenologies to Counter Foreign Denial and Deception Programs," Proceedings of the MASINT Signatures Technology Symposium, Chantilly, VA 12-13 Sep 2005. [CMSR]

Perdzock, Janet and Ronald F. Tuttle, "MAGIC e-Learning," Proceedings of the New Learning Technologies Conference, Society for Applied Learning Technology, Orlando, FL 8-10 Feb 2006. [CMSR]

5.3.8 SUBSTANTIAL CONSULTATIONS

BUNKER, DAVID J.,

Bunker, David J., "Development and Application of MASINT Techniques for Underground Facilities," National Air and Space Intelligence Center, Oct 2005 – Jan 2006. [CMSR]

Bunker, David J., "Synthesis and Evaluation of Advanced Geospatial Intelligence Signatures," National Air and Space Intelligence Center, Oct 2005 – Sep 2006. [CMSR]

Bunker, David J., "MASINT/AGI Classified Journal," National Geospatial-Intelligence Agency and the National MASINT Committee, Oct 2005 – Sep 2006. [CMSR]

CUSUAMNO, SALVATORE J.,

Perram, Glen, Bartell, Rick, Krizo, Mathew, Fiorino, Steven, Cusumano, Salvatore J., "High energy Laser Weapons: Modeling and Simulation", Joint Technology Office for High energy Lasers (JTO HEL). [CDE]

Cusumano, Salvatore J., "Subject Matter Expert (SME) Consultations" to Air Force Flight Test Center, member of the Safety Review Board for the Airborne Laser. [CDE]

Bartell, Richard, Krizo, Mathew, Fiorino, Steven, Cusumano, Salvatore J., "Robust Characterization of DEW Weapons: HELEEOSIntel". [CDE]

Cusumano, Salvatore J., Marciniak, Michael A., Bailey, Bill, and McCrae, Jack, "Delivered Irradiance assessment Tool (DIAT)," Directed Energy Test and Evaluation Capability, Jul-Sep 2006. [CDE]

GERTS, DAVID W., Maj

*Gerts, D. W. and K. A. Mathews, "High Altitude Nuclear Effects: Radiation Transport Within and Above the Atmosphere", Air Force Technical Applications Command, Patrick AFB, FL, May-Sep 2006.

MARCINIAK. MICHAEL A.,

*Cusumano, Sal, Marciniak, Michael A., Bailey, Wm. F., and McCrae, Jack, "Delivered Irradiance Assessment Tool (DIAT)," Directed Energy Test and Evaluation Capability, Jul-Sep 2006. [CDE]

Marciniak, Michael A., "Infrared optical signature measurement research," Signature Division, Sensors Directorate, Air Force Research Laboratory (AFRL/SNS), Oct 2005-Sep 2006. [CMSR]

Marciniak, Michael A., "Infrared counter-countermeasure research," Sensor Materials Branch, Survivability and Sensor Materials Division, Materials and Manufacturing Directorate, AFRL (AFRL/MLPJ), Oct 2005-Sep 2006. [CMSR]

Marciniak, Michael A., "Radiometric analysis of daytime satellite detection," Electro-Optical (EO) Countermeasures Technology Branch, Electro-Optical Sensor Technology Division, AFRL/SN (AFRL/SNJW), Oct 2005-Mar 2006. [CMSR]

Marciniak, Michael A., “Stress analysis of silicon carbide (SiC) micro-electromechanical systems (MEMS) fuses using Raman spectroscopy,” Seeker Branch, Advanced Guidance Division, AFRL (AFRL/MNMF), Oct 2005-Mar 2006.

Marciniak, Michael A., “Time-resolved luminescence spectroscopy to determine carrier dynamics in mid-infrared semiconductor quantum well optoelectronic devices for Air Force applications,” Air Force Office of Scientific Research, Oct 2005-Sep 2006. [CDE]

MATHEWS, KIRK A.,

Mathews, K. A., “Detection of Low-Level Radioactive Materials and Nuclear Fuel Cycle Issues”, Air Force Technical Applications Command, Patrick AFB, FL, Jul-Aug 2006. [CMSR]

*Gerts, D. W. and K. A. Mathews, “High Altitude Nuclear Effects: Radiation Transport Within and Above the Atmosphere”, Air Force Technical Applications Command, Patrick AFB, FL, May-Sep 2006.

TUTTLE, RONALD F.,

Tuttle, Ronald F., “Educating the NGA Workshop on Advanced Geospatial Intelligence Disciplines,” National Geospatial-Intelligence Agency, Oct 2005–Jun 2006. [CMSR]

5.3.9 PRESENTATIONS

ALLEY, THOMAS G., Lt Col.

Terry, N.B., T.G. Alley, and W.B. Roh, “Brightness conversion using a Raman fiber laser based on a multimode fiber,” Advanced Solid State Photonics 2006 topical meeting, 30 Jan 2006, Lake Tahoe, NV. [CDE]

*Grime, B.W., W.B. Roh, and T.G. Alley, “Beam phasing multiple fiber amplifiers using a fiber phase conjugate mirror,” Fiber Lasers III: Technology, Systems, and Applications (Photonics West LASE Symposium), 25 Jan 2006, San Jose, CA. [CDE]

BAILEY, WILLIAM F.,

Josyula, E. and Wm. F. Bailey, "Multiquantum Vibrational Energy Exchanges in Nonequilibrium Hypersonic Flows", AIAA 2005-5204, Presented in 38th AIAA Thermophysics Conference, Toronto, Canada June 2005.

Josyula, E. and Wm. F. Bailey, "Modeling of Thermal Dissociation in Nonequilibrium Hypersonic Flows," AIAA 2006-3421, Presented in 9th AIAA/ASME Joint Thermophysics and Heat Transfer Conference, June 2006, San Francisco, California

Josyula, E. and Wm. F. Bailey, "State-Specific Vibrational Relaxation and Thermal Dissociation in Nonequilibrium Hypersonic Flows," Presented in 25th Int'l Rarefied Gas Dynamics Conf., July 2006, St. Petersburg, Russia. [CMSR]

BUNKER, DAVID J.,

*Tuttle, Ronald F., Adam Talkington and David J. Bunker, “Using Visual Interactive Site Analysis Code (VISAC) Predictives for Post-Attack Signature Database Development to Aid in the Functional Defeat of a Foreign Nuclear Power Plant,” MASINT Signatures Technology Symposium, Chantilly, VA 12-13 Sep 2005. [CMSR]

CUSUMANO, SALVATORE J.,

Salvatore J. Cusumano, Richard J. Bartell, Marken J Houle, Glen P. Perram, and Robert L. Hengehold, "Directed Energy Education at AFIT—A Pyramid Model for Educating DE Professionals" Directed Energy Professional Society Eighth Annual Symposium & Education Workshop, Lihue, HI, November 2005. [CDE]

Cusumano, Salvatore J., Houle, Marken, "AFRL-AFIT Collaboration on the SMART Program", AFRL/SN, Nov 2006. [CDE]

Cusumano, Salvatore J., Houle, Marken, "AFIT's Center for Directed Energy", NRO, Nov 2006. [CDE]

Cusumano, Salvatore J., Houle, Marken, "AFRL-AFIT Collaboration on the SMART Program", AFRL/VA, Jan 2006. [CDE]

Cusumano, Salvatore J., Houle, Marken, "AFIT", ABL SPO, KAFB, NM, Jan 2006. [CDE]

Cusumano, Salvatore J., Houle, Marken, "AFIT and the Center for Directed Energy", AFRL/DE, KAFB, NM, Feb 2006. [CDE]

Cusumano, Salvatore J., Houle, Marken, "AFIT and the SMART Program", 452nd FTW, EAFB, CA, Feb 2006. [CDE]

Cusumano, Salvatore J., Houle, Marken, "How the Center can work within the Intel Community", DIA, Mar2006. [CDE]

Cusumano, Salvatore J., Houle, Marken, "The Center for Directed Energy", ACC, Langley AFB, VA, Apr 2006. [CDE]

FIORINO, STEVEN T., Lt Col

Belton, S.L., S.T. Fiorino, R.J. Bartell, and M.J. Krizo, "The Simulation of Off-Axis Laser Propagation Using HELEEOS" Directed Energy Professional Society 2006 Systems Symposium, Monterey, CA, 22 March 2006. [CMSR]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, L.E. Gravley, T.P. Huster, J.P. Cheney, K.B. Le and S. Hammel, "Comparison of HELEEOS Systems Model Results to Analysis of a Maritime HEL Propagation Study Utilizing Several Independent Models and Databases" Directed Energy Professional Society 2006 Systems Symposium, Monterey, CA, 22 March 2006. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, L.E. Gravley, T.P. Huster, J.P. Cheney, and K.B. Le, "Expected Performance of High Energy Lasers Operating Under Geographically and Spectrally Diverse Conditions for Oblique Near Earth Scenarios in the Presence of Common Atmospheric Obscurants" Directed Energy Professional Society 2006 Systems Symposium, Monterey, CA, 22 March 2006. [CDE]

Gravley, L.E., S.T. Fiorino, R.J. Bartell, G.P. Perram, M.J. Krizo, and K.B. Le, "Comparison of Climatological Optical Turbulence Profiles to Standard, Statistical and Numerical Models Using HELEEOS" Directed Energy Professional Society 2006 Systems Symposium, Monterey, CA, 22 March 2006. [CDE]

*Bartell, R.J., G.P. Perram, S.T. Fiorino, M.J. Krizo, E. Magee, M. Whiteley, and A. Ngwele, "Evaluation of Phase-Only Adaptive Optics Efficacy Over a Diverse Range of Operating Regimes-Part II" Directed Energy Professional Society 2006 Systems Symposium, Monterey, CA, 23 March 2006. [CDE]

Bartell, R.J., S.T. Fiorino, G.P. Perram, M.J. Krizo, T.P. Huster, J.P. Cheney, E. Magee, M. Whiteley, and A. Ngwele, "Comparison of Peak Irradiance and Power-in-the-Bucket Predictions Among Several Scaling Law Models and Wave Optics Codes Over Diverse Low Altitude Operating Regimes" Directed Energy Professional Society 2006 Annual Symposium, Albuquerque, NM, 2 November 2006. [CDE]

Fiorino, S.T., R.J. Bartell, J.D. Eckel, M.J. Krizo, and S.J. Cusumano, "Application and Impacts of Ground-to-Space Cloud Free Line of Sight Probabilities to Air-to-Ground High Energy Laser Engagement Scenarios" Directed Energy Professional Society 2006 Annual Symposium, Albuquerque, NM, 2 November 2006. [CDE]

GERTS, DAVID W., Maj

*Mathews, K. A. and D. W. Gerts, "Bayesian analysis for very-low-background counting of short-lived isotopes: Lowest Minimum Detectable Quantity" 8th Methods and Applications of Radioanalytical Chemistry International Conference, Kailua-Kona, HI, 3 – 7 Apr 2006.

HENGEHOLD, ROBERT L.,

*Raley, J.A., J. Wei, Y.K. Yeo, R.L. Hengehold, M.A. Marciniak, P. Wu, and Y. Lu, "Annealing Temperature Dependence of the Magnetic Moment Observed in ZnO Nanotips Implanted with Mn," the March 2006 Meeting of the American Physical Society, Baltimore, Maryland, 13-17 March 2006.

*Ryu, M.Y., Y.K. Yeo, and R.L. Hengehold, "Electrical and Optical Activation Studies of Si-implanted $Al_xGa_{1-x}N$," the 4th International Conference on Advanced Materials and Devices (ICAMD), Jeju Island, Korea, 5-7 December 2005. [CDE]

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*Salvatore J. Cusumano, Richard J. Bartell, Marken J Houle, Glen P. Perram, and Robert L. Hengehold, "Directed Energy Education at AFIT—A Pyramid Model for Educating DE Professionals" Directed Energy Professional Society Eighth Annual Symposium & Education Workshop, Lihue, HI, November 2005. [CDE]

MARCINIAK, MICHAEL A.,

J.D. Norman, M.A. Marciniak and M.B. Haeri, "Optical blooming effects in indium-antimonide detector arrays under high-flux conditions," 2006 Meeting of the Military Sensing Symposium Specialty Group on Infrared Countermeasures, Monterey, CA, 25-27 April 2006. [CDE]

J.D. Clark, M.A. Marciniak, R.L. Nelson and J.A. Lott, "Studies of triangular-structured two-dimensional photonic crystals for visible wavelength selection," Great Lakes Photonics Symposium, Dayton, OH, 12-16 June 2006.

F.E. Parada, M.A. Marciniak, L.A. Starman, J.R. Foley and Y.K. Yeo, "Characterization of stress in GaN-on-sapphire MEMS structures using micro-Raman spectroscopy," Great Lakes Photonics Symposium, Dayton, OH, 12-16 June 2006.

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S.A. Uzpen, M.A. Marciniak, J.W. Burks and J.P. Costantino, "A measurement-base examination of optical signature changes due to weathering effects on aircraft paint," 29th Exhaust Plume Technology Subcommittee (EPTS) and 11th SPIRITS User Group, Littleton, CO, 19-23 June 2006. [CMSR]

J.M. Lemery, M.A. Marciniak, N.J. Abel and S.R. Davidson, "Analysis of electro-optic sensor detection via optically augmented retro-reflections," 2006 Meeting of the Military Sensing Symposium Specialty Group on Infrared Countermeasures, Monterey, CA, 25-27 April 2006. [CMSR]

Ryu, M.Y., E.A. Moore, Y.K. Yeo, M.A. Marciniak, and R.L. Hengehold, "Hall Effect and Luminescence Measurements on Si-implanted $Al_xGa_{1-x}N$," the 28th International Conference on the Physics of Semiconductors, Vienna, Austria, 24-28 July 2006.

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J. Bortle and M.A. Marciniak, "A measurement- and prediction-based validation of the AFIT Large Commercial Aircraft Infrared (LCAIR) signature tool," Electro-Optic/Infrared Calibration and Characterization Workshop, Logan, UT, 7-9 March 2006. [CMSR]

MATHEWS, KIRK A.,

Mathews, K. A. and D. W. Gerts, "Bayesian analysis for very-low-background counting of short-lived isotopes: Lowest Minimum Detectable Quantity" 8th Methods and Applications of Radioanalytical Chemistry International Conference, Kailua-Kona, HI, 3 – 7 Apr 2006.

Mathews, K. A., "Curve-Fitting of Log-Discretized Data", *Satellite Sensor Review Panel*, Air Force Technical Applications Command, Patrick AFB, FL, 2 – 4 May 2006.

PERRAM, GLEN P.,

Kevin. C. Gross and Glen P. Perram, "Developing a Phenomenological Model of Infrared Emissions from Detonation Fireballs for Explosive Identification" 8th Workshop on Infrared Remote Sensing Applications, Mont Sainte-Anne, Quebec, Canada, Oct 2006. [CMSR]

B. J. Steward, T. Warren, K. Gross, G. P. Perram, "Multiband imagery of detonation fireballs for event classification", SPIE Great Lakes Photonics Symposium, Dayton, Ohio, 12-16 June 2006. [CMSR]

R. L. Bostick, G. P. Perram, "Hyperspectral mid-infrared imagery of transient emissive events using chromotomography", SPIE Great Lakes Photonics Symposium, Dayton, Ohio 12-16 June 2006. [CMSR]

Randall Bostick and Glen Perram, "Hyperspectral Imaging using Chromotomography: A Fieldable Visible Instrument for Transient Events" 2006 International Symposium on Spectral Sensing Research, Bar Harbor, Maine 29 May – 2 June 2006. [CMSR]

Glen Perram, Kevin Gross, Bryan Steward, Trevor Warren, and Ronald Tuttle, "The Phenomenology Of High Explosive Fireballs from Fielded Spectroscopic And Imaging Sensors for Event Classification", 2006 International Symposium on Spectral Sensing Research, Bar Harbor, Maine 29 May – 2 June 2006. [CMSR]

Kevin C. Gross, Glen P. Perram, Ronald F. Tuttle, "Developing a Phenomenological Model of Infrared Emissions from Detonation Fireballs for Explosives Identification" 9th International HITRAN Conference, Columbus, OH, 26-28 June 2006. [CMSR]

*Richard Bartell, Steven Fiorino, Matthew Krizo, Glen Perram, Todd Huster, Justin Cheney, Eric Magee, Matthew Whiteley, and Amy Ngwele, "Comparison of Peak Irradiance and Power in the Bucket Predictions Among Several Scaling Law Models and Wave Optics Codes Over Diverse Low Altitude Operating Regimes", Ninth Annual Directed Energy Symposium, Albuquerque, NM, Nov 2006. [CDE]

Katherine Essenhigh and Glen Perram, "Planar Laser Induced Fluorescence for Supersonic Flow Visualization" Ninth Annual Directed Energy Symposium, Albuquerque, NM, Nov 2006. [CDE]

Kevin C. Gross, Glen P. Perram, Ronald F. Tuttle, "Using fireball signatures and phenomenology to distinguish high explosives" 2nd Annual Advanced Signatures Technology Symposium, Air Force Institute of Technology, Wright Patterson Air Force Base, Ohio 7-9 Nov 2006. [CDE]

Skip William, Jeffrey Gallagher and Glen Perram, "Collisional broadening coefficients of singlet ($a^1\Delta_g$) oxygen with helium", 2006 59th Annual Gaseous Electronics Conference, Columbus, OH, Oct 2006. [CDE]

C. Phelps, C. Druffner, R. R. Biggers, G. P. Perram, "Optical analysis of the emissive plume structure during pulsed laser deposition of YBCO", SPIE Great Lakes Photonics Symposium, Dayton, Ohio 12-16 June 2006. [CDE]

G. P. Perram, G. A. Pitz, K. Essenhigh, "Flow visualization for high-power chemical lasers", SPIE Great Lakes Photonics Symposium, Dayton, Ohio 12-16 June 2006. [CDE]

Steven T. Fiorino, Richard J. Bartell, Glen P. Perram, Matthew J. Krizo, Liesebet E. Gravley, Todd P. Huster, Justin P. Cheney, and Kelly B. Le, "Expected Worldwide Laser Performance in Spectrally Diverse Near Earth Scenarios in the Presence of Common Atmospheric Obscurant" MSS Conference. [CDE]

Steven T. Fiorino, Richard J. Bartell, Glen P. Perram, Matthew J. Krizo, Liesebet E. Gravely, Todd P. Huster, Justin P. Cheney, and Kelly B. Le, "Expected Performance of High Energy Lasers Operating Under Geographically and Spectrally Diverse Conditions for Oblique Near Earth Scenarios in the Presence of Common Low Altitude Atmospheric Obscurants", Directed Energy Professional Society 1st Annual Systems Symposium, Monterey, CA, March 2006. [CDE]

Salvatore J. Cusumano, Richard J. Bartell, Marken J Houle, Glen P. Perram, and Robert L. Hengehold, "Directed Energy Education at AFIT—A Pyramid Model for Educating DE Professionals" Directed Energy Professional Society Eighth Annual Symposium & Education Workshop, Lihue, HI, November 2005. [CDE]

Carl J. Druffner, Patrick D. Kee, Glen P. Perram, R.R. Biggers "Developing Optical Diagnostic Sensors for Monitoring Pulsed Laser Deposition of Long Lengths of $YBa_2Cu_3O_{7-x}$ Wires" 1st Dayton Engineering Sciences Symposium, Dayton, Ohio, October 2005. [CDE]

Richard J. Bartell, Steven T. Fiorino, Glen P. Perram, Scott N. Long, Matthew J. Krizo, Todd P. Huster, Justin P. Cheney, and Liesebet E. Gravley, "Methodology for Estimation of Variance in High Energy Laser System Performance Due to Spatial and Temporal Climatological Effects from 0.355 μm – 14 μm", Directed Energy Professional Society 8th Annual Symposium, Lihue, HI, November 2005. [CDE]

Matthew A. Lange, Greg A. Pitz and Glen P. Perram, "The effect of residence time on the production of singlet oxygen in a microwave discharge", Directed Energy Professional Society 8th Annual Symposium, Lihue, HI, November 2005. [CDE]

Kevin C. Gross, Glen P. Perram, and Ronald F. Tuttle, "High Explosive Fireball Phenomenology for Event Classification", Directed Energy Professional Society 8th Annual Symposium, Lihue, HI, November 2005. [CDE]

Michael R. Hawks and Glen P. Perram, "Monocular Passive Ranging (MPR) for tracking boost-phase missiles based on $O_2(X^3\Sigma_g^- \rightarrow b^1\Sigma_g^+)$ atmospheric absorption", Directed Energy Professional Society 8th Annual Symposium, Lihue, HI, November 2005. [CDE]

PETROSKY, JAMES C.,

Petrosky, James C., "Motivations for Proliferation and the Emerging Energy Problem" [invited talk], American Nuclear Society Student Conference, Rensselear Polytechnic Institute, Troy New York 31 March, 2006

SMITHTRO, CHRISTOPHER G., Maj

Smithtro, C. and J. J. Sojka, "Climatological response of a 1-D thermosphere and ionosphere to anthropogenic and solar drivers", presented at American Geophysical Union Spring Meeting, Baltimore, MD, 24 May 2006.

Smithtro, C., "Operational Use of EVE Products in the Ionosphere", presented at EVE Science Team Meeting, Warner Springs, CA, 10 November 2005.

TUTTLE, RONALD F.,

*Glen Perram, Kevin Gross, Bryan Steward, Trevor Warren, and Ronald Tuttle, "The Phenomenology Of High Explosive Fireballs from Fielded Spectroscopic And Imaging Sensors for Event Classification", 2006 International Symposium on Spectral Sensing Research, Bar Harbor, Maine 29 May – 2 June 2006. [CMSR]

Tuttle, Ronald F., Adam Talkington and David J. Bunker, "Using Visual Interactive Site Analysis Code (VISAC) Predictives for Post-Attack Signature Database Development to Aid in the Functional Defeat of a Foreign Nuclear Power Plant," MASINT Signatures Technology Symposium, Chantilly, VA 12-13 Sep 2005. [CMSR]

Tuttle, Ronald F., "MASINT Certificate Program for the Intelligence Community Professional," MASINT Training and Education Workshop, Defense Intelligence Analysis Center, Bolling AFB, MD 28-30 Mar 2006. [CMSR]

*Kevin C. Gross, Glen P. Perram, Ronald F. Tuttle, "Using fireball signatures and phenomenology to distinguish high explosives" 2nd Annual Advanced Signatures Technology Symposium, Air Force Institute of Technology, Wright Patterson Air Force Base, Ohio 7-9 Nov 2006. [CDE]

*Kevin C. Gross, Glen P. Perram, and Ronald F. Tuttle, "High Explosive Fireball Phenomenology for Event Classification", Directed Energy Professional Society 8th Annual Symposium, Lihue, HI, November 2005. [CDE]

WEEKS, DAVID E.,

Scoville, J.A. and D.E. Weeks, Modeling fluid dynamics on type II quantum computers, APS March meeting, Baltimore, MD, March 13-17, 2006.

B.S. Davis and D.E. Weeks, A Time Dependent Approach for Computing N-N Phase Shifts and Cross Sections, APS March meeting, Baltimore, MD, March 13-17, 2006.

YEO, YUNG KEE,

Ryu, M.Y., Y.K. Yeo, and R.L. Hengehold, "Electrical and Optical Activation Studies of Si-implanted $Al_xGa_{1-x}N$," the 4th International Conference on Advanced Materials and Devices (ICAMD), Jeju Island, Korea, 5-7 December 2005.

Raley, J.A., J. Wei, Y.K. Yeo, R.L. Hengehold, M.A. Marciniak, P. Wu, and Y. Lu, "Annealing Temperature Dependence of the Magnetic Moment Observed in ZnO Nanotips Implanted with Mn," the March 2006 Meeting of the American Physical Society, Baltimore, Maryland, 13-17 March 2006.

*Parada, F., M.A. Marciniak, L.V. Starman, J. Foley, and Y.K. Yeo, "Characterization of Stress in Thin-Film Wurtzite GaN Grown on c-Plane Sapphire by Molecular Beam Epitaxy," the March 2006 Meeting of the American Physical Society, Baltimore, Maryland, 13-17 March 2006.

Bartynski, R.A., D.H. Hill, D.A. Arena, P. Wu, G. Saraf, Y. Lu, , F. Cosandey, J.F. Al-Sharab, L. Wielunski, R. Gateau, J. Dvorak, A. Moodenbaugh, J.A. Raley, and Y.K.Yeo, "Room Temperature Ferromagnetism in Fe Implanted ZnO Nanotips," the 66th Physical Electronics Conference 2006, Princeton, New Jersey, 18-21 June 2006.

Wu, P, G. Saraf, Y. Lu, D.H. Hill, D.A. Arena, R.A. Bartynski, L.S. Wielunski, J.A. Raley, and Y.K.Yeo, "Ferromagnetism in Fe-Implanted ZnO Films and Nanotips," the 2006 Electronics Materials Conference, University Park, Pennsylvania, 28-30 June 2006.

Ryu, M.Y., E.A. Moore, Y.K. Yeo, M.A. Marciniak, and R.L. Hengehold, "Hall Effect and Luminescence Measurements on Si-implanted $Al_xGa_{1-x}N$," the 28th International Conference on the Physics of Semiconductors, Vienna, Austria, 24-28 July 2006.

5.3.10 OTHER SIGNIFICANT PROFESSIONAL ACTIVITIES

BUNKER, DAVID J.,

Member: National Consortium for MASINT Research, Nov 2004 - present

Member: Wright-Patterson MASINT Development Consortium, Sep 2004 - present

Chair: Planning Committee, 2006 Advanced Signatures Technology Symposium

CUSUMANO, SALVATORE J.,

AFIT's Representative on the Air Force Futures Group

Session Chair, Technical Program for DEPS Modeling and Simulation Conference, Mar 2006-06-15

FIORINO, STEVEN T., Lt Col

President: Wright Memorial Chapter, American Meteorological Society

HENGEHOLD, ROBERT L.,

Chair: Honors and Awards Committee; Ohio Section of the American Physical Society

Member: Executive Committee, Ohio Section of the American Physical Society

LAGRAFFE, DAVID A., LTC

Established new Professional Science Master's Degree Program in Combating Weapons of Mass Destruction at AFIT

Established new AFIT Graduate Certificate course in Combating Weapons of Mass Destruction

MARCINIAK, MICHAEL A.,

Undergraduate research advisor: "A short study of copper-indium-gallium-selenide amorphous polycrystalline thin-film solar cells $CuIn_{1-x}Ga_xSe_2$ (CIGS) through photoluminescence spectroscopy," John M. Callahan, Wright State University, Oct 2005-Jun 2006.

MATHEWS, KIRK A.,

Member: Satellite Sensor Review Panel (SSRP), Air Force Technical Applications Center

PERRAM, GLEN P.,

Technical Chairman: Directed Energy Professional Society, Directed Energy Modeling and Simulation Conference.

Monterey, CA, Mar 2006.

PETROSKY, JAMES C.,

Chair: QASPR Independent Review Team, NNSA

Member: Nuclear Engineering Department Heads Organization

Radiation Effects Judge, ANS student conference, March, 2006

SMITHTRO, CHRISTOPHER G., Maj

Scientific Advisor to NASA's Community Coordinated Modeling Center (CCMC) Steering Group, August 2005 – present.

Member of the Extreme-ultraviolet Variability Experiment (EVE) Science Team, 2002 – present.

TUTTLE, RONALD F.,

Member: Education and Training Subcommittee, Cross-Functional Working Group, National Geospatial-Intelligence Agency, Oct 2005 – Jun 2006

WOLF, PAUL J.,

Councilor: American Physical Society Council

Member: Executive Committee, Ohio Section of the American Physical Society

YEO, YUNG KEE,

Honorary Co-chair of the 13th International Symposium on the Physics of Semiconductors and Applications, 22-25 August 2006.

5.4 DEPARTMENT OF MATHEMATICS AND STATISTICS

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5.4.1 MASTERS THESES

5.4.1.1 APPLIED MATHEMATICS (GAM)

MIXON, DUSTIN G. *Doppler-Only Multistatic Radar.* AFIT/GAM/ENC/06-01, Faculty Advisor: Dr. Matthew Fickus. Sponsor: N/A

PROANO, ZACHARY. *Existence of Explosive Solutions to Non-Monotone Semilinear Elliptic Equations.* AFIT/GAM/ENC/06-03, Faculty Advisor: Dr. Aihua W. Wood. Sponsor: N/A.

SAMLER, JENNIFER J. *Statistical Approach to Background Subtraction for Production of High-Quality Silhouettes for Human Gait Recognition.* AFIT/GAM/ENC/06-04, Faculty Advisor: Maj Samuel A. Wright. Sponsor: N/A.

SMITH, DAVID N. *Existence of Large Solutions to Semi-Linear Elliptic Equations with Multiple Terms.* AFIT/GAM/ENC/06-05, Faculty Advisor: Dr. Aihua W. Wood. Sponsor: N/A.

TISDEL, JASON E. *Small Sample Confidence Intervals in Log Space Back-Transformed from Normal Space.* AFIT/GAM/ENC/06-02, Faculty Advisor: Dr. Edward White. Sponsor: N/A.

5.4.1.2 INORMATION RESOURCE MANAGEMENT (GIR)

CROSS, STEVEN M. *Data Analysis and its Impact on Predicting Schedule & Cost Risk.* AFIT/GIR/ENC/06M-01, Faculty Advisor: Dr. Edward D. White, III. Sponsor: AFCAA.

5.4.1.3 SPACE SYSTEMS (GSS)

O'REILLY, KEVIN R. *Quantitative Object Reconstruction using ABEL Transform Tornography and Mixed Variable Optimization.* AFIT/GSS/ENC/06-01, Faculty Advisor: Lt Col Mark A. Abramson. Sponsor: Los Alamos National Laboratory.

5.4.2 FUNDED RESEARCH PROJECTS

ABRAMSON, MARK A., Lt Col

"Quantitative Reconstruction of Light Source Curves and Surfaces." Sponsor: DoE (Los Alamos National Laboratory). Funding: $9,910.

"Quantitative Object Reconstruction for X-Ray Imaging." Sponsor: DoE (Los Alamos National Laboratory). Funding: $20,090.

NEHER, ROBERT E. Jr, Lt Col

"Segmenting and Classifying Image Scenes with a Bayesian Model Using Hyperspectral Imagery." Sponsor: DoE (Pacific Northwest National Laboratory). Funding: $6786.

OXLEY, MARK E.

"Mathematics and Statistical Research." Sponsor: AFRL/AFOSR. Funding: $5,000.

"A New Paradigm in Image Location Registration using Polar Wavelets." Sponsor: AFRL/AFOSR. Funding: $30,000.

5.4.3 REFEREED JOURNALS

ABRAMSON, MARK A., Lt Col

Abramson, Mark A. and Charles Audet, "Convergence of mesh adaptive direct search to second-order stationary points," *SIAM Journal on Optimization, 17* (2): 606-619 (2006).

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Swim, E.W. and P. Seshaiyer, "A Nonconforming Finite Element Method for Fluid-Structure Interaction Problems," *Computer Methods in Applied Mechanics and Engineering,* 195:2088-2099 (2006).

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Genest, D. C., and E. D. White, "Predicting RDT&E Cost Growth," *Journal of Cost Analysis and Management* (Fall), 2005, pp. 1-12.

Bielecki, J., and E. D. White, "Refinement of Estimates: Using Logistic and Multiple Regression to Predict Cost Growth," *Military Operations Research*, 2005, Vol. 10, No. 3, pp. 45-56.

WOOD, AIHUA W.,

Wood, A. W., "Analysis of electromagnetic scattering from an overfilled cavity in the ground plane," *Journal of Computational Physics*, Vol. 215, No.2 (2006), pp. 630-641.

5.4.4 OTHER PUBLICATIONS

CRITTENDEN, PAUL E.,

Hyde, M., M. Havrilla, and P. E. Crittenden, "Free-space and waveguide technique for determining the resistivity of an r-card using the forward transmission coefficient", Antennas, Radar and Wave Propagation Conference Proceedings, Banff, Alberta, CA, July 2006.

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Casazza, P.G., M. Fickus, J.C. Tremain and E. Weber, "The Kadison-Singer Problem in Mathematics and Engineering," *Contemporary Mathematics*, Vol. 414, pp. 299-355 (2006).

KAZISKA, DAVID M., Maj

Joshi, S., D. Kaziska, A. Srivastava, W. Mio, *Riemannian Structures on Shape Spaces: A Framework for Statistical Inferences*, book chapter in *Statistics and Analysis of Shapes,* edited by Hamid Krim, Anthony Yezzi, Springer, 2006.

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Srivastava, A., A. Jain, S. Joshi, and D. Kaziska, Statistical Shape Models Using Elastic-String Representations, Asian Conference on Computer Vision (1), pp. 612-621, Hyderabad, India (2006).

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*Roberts, M. L., M. A. Temple, M. E. Oxley, R. F. Mills, and R. A. Raines, "A General Analytic Framework for Spectrally Modulated, Spectrally Encoded Signals," 2006 International Waveform Diversity & Design Conference, Lihue HI, 22-27 January 2006.

*Thorsen, S. N. and Mark E. Oxley, "Quantifying the Robustness of Classification Systems", Proceedings of *SPIE: Signal Processing, Sensor Fusion, and Target Recognition XV*, Editor: Ivan Kadar, Vol. 6235, paper 34, on compact disc Orlando FL, 17-21 April 2006.

*Schubert, C. M., S. N. Thorsen , M. E. Oxley, and K. W. Bauer, Jr., "Performance Measures for ATR Systems with Multiple Classifiers and Multiple Labels", Proceedings of *SPIE; Signal Processing, Sensor Fusion, and Target Recognition XV*, Editor: Ivan Kadar, Vol. 6235, paper 35, on compact disc, Orlando FL, 17-21 April 2006.

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5.4.5 SUBSTANTIAL CONSULTATIONS

DUCKRO, DONALD E., Lt Col

Duckro, Donald E., "Statistical consulting on C-17 Tests," ASC/YC, WPAFB, OH, Dec 2005.

NEHER, ROBERT E. JR., Lt Col

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5.4.6 PRESENTATIONS

ABRAMSON, MARK A., Lt Col

* O'Reilly, Kevin R., Mark A. Abramson, Thomas J. Asaki, J. E. Dennis, Jr., James W. Chrissis, and Rachael L. Pingel, "Quantitative Object Reconstruction using X-Ray Tomography and Mixed Variable Optimization," INFORMS Military Applications Society Conference, Mystic, CT, July 24-26, 2006.

O'Reilly, Kevin R., Mark A. Abramson, Thomas J. Asaki, J. E. Dennis, Jr., and Rachael L. Pingel, "A Mixed Variable Optimization Approach to the Quantitative Reconstruction of Objects in X-Ray Tomography", Boeing Corporation (Phantom Works), Seattle, WA, June 29, 2006.

O'Reilly, Kevin R., Mark A. Abramson, and Thomas J. Asaki, "Quantitative Object Reconstruction using Abel Transform Tomography and Mixed Variable Optimization," Los Alamos National Laboratory, Los Alamos, NM, March 9, 2006.

*Kharoufeh, Jeffrey P. and Mark A. Abramson, "Optimal Periodic Inspection of a System Subject to Wear and Shock Degradation," INFORMS Annual Meeting, San Francisco, California, November 13-16, 2005.

Abramson, Mark A. and Charles Audet, "Second-Order Convergence of Mesh Adaptive Direct Search", INFORMS Annual Meeting, San Francisco, California, November 13-16, 2005.

BAKER, WILLIAM P.,

*Shepherd, M. J., R. G. Cobb, and W. P. Baker, "Clear Aperture Design Criterion for Deformable Membrane Mirror Control ," IEEE Aerospace Conference, IEEE Mar 2006. [CSSR]

*Shepherd, M. J., R. G. Cobb, and W. P. Baker, "Low-order actuator influence functions for piezoelectric in-plane, actuated, tensioned circular deformable mirrors ," Smart Structures & Materials/NDE, San Diego, California, SPIE, 2006. [CSSR]

CRITTENDEN, PAUL E.,

Bahar, E. and P. E. Crittenden, " Radar Cross Section for Composite Gaussian or Pearson-Moskovitz Type Random Rough Surfaces Based on the two-scale Unified Full-wave Approach," URSI, Jan 2006.

Crittenden, P. E., "A Modal Solution for a Thermal wave at a Planar Interface," The 25th SE Atlantic Conference on Differential Equations, Dayton, OH, Oct 2005.

Crittenden, P. E. and E. Bahar, "Polarization Dependent Backscatter Cross Sections of Composite Random Rough Surfaces Based for Normal to Near Grazing Incidence ," PIERS, Cambridge, MA, Mar 2006.

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Bott, J., M. Bowes, P. Chapin, D. Duckro, D. Futrell, J. Harris, L. La Barbera, A. Layman, J. McGill, R. Pritchard, E. Turner, "Army Analysis Shaping the Future Analytical Support to the Headquarters and Support Activities Joint Cross Service Group, BRAC 2005," INFORMS Annual Meeting, San Francisco, California, November 13-16, 2005.

FICKUS, MATTHEW C.,

Fickus, M., **"**Gauss sums and a finite chirp-Fourier transform," AMS Fall Western Section Meeting, Special Session on Wavelets, Frames, and Related Expansions, University of Oregon, November 11, 2005

NOVAK, KYLE A., Maj

Jin, S. and K. Novak, "A Semiclassical Transport Model for Thin Quantum Barriers", SIAM Conference on Analysis of Partial Differential Equations, Boston, MA, July 10-12, 2006

OXLEY, MARK E.,

Oxley, Mark E., "Information Forensics and the Art of Inquiry," SPIE Intelligent Computing: Theory and Applications IV, Orlando FL, 17 April 2006.

Oxley, Mark E., "Quantifying the Performance of Multiple Label-fused Automatic Target Classification Systems," SPIE Great Lakes Photonics Symposium, Dayton OH, 15 June 2006.

Oxley, Mark E., "Determining the Best Operating Point on a ROC curve for ATR Systems," SPIE Great Lakes Photonic Symposium, Dayton OH, 15 June 2006.

Oxley, Mark E., "Categories of Situations for Level 2 Fusion," 9th International Conference on Information Fusion, Special Session on Category Theory and Information Fusion I, Florence Italy, 12 July 2006.

WHITE, EDWARD D., III

White, Edward D., "A Multidisciplinary Research Approach to Cost Estimating," invited speaker, Society of Cost Estimating and Analysis (SCEA) Luncheon, Dayton Chapter, Wright-Patterson Air Force Base, Dayton, Ohio, March 14, 2006.

5.4.7 OTHER SIGNIFICANT PROFESSIONAL ACTIVITIES

ABRAMSON, MARK A., Lt Col

Technical Paper Referee, *Society for Industrial and Applied Mathematics (SIAM) Journal on Optimization* and *Global Optimization*

BULUTOGLU, DURSUN,

Technical Paper Referee: *Journal of Statistical Planning and Inference (Special issue on metaheuristics); Journal of Statistical Planning and Inference; Journal of Statistical Planning and Inference (Special issue on metaheuristics); Technometrics; Metrika*

DUCKRO, DONALD E., Lt Col

Technical Paper Referee, *Systems Engineering*, Nov 2005

LAIR, ALAN V.,

Naval Advisory Panel on Configural Theory (2005)

Reviewer, *Mathematical Reviews*

OXLEY, MARK E.,

Member, SPIE Conference Program Committee for *Intelligent Computing: Theory and Applications III,* Orlando, FL, April 2006.

Co-Chair, Conference on *Sensor-ATR Exploitation* at the SPIE Great Lakes Photonics Symposium (GLPS 2006), Dayton OH, 12-16 June 2006.

Co-Organizer of Special Session: Category Theory and Information Fusion at 9th International Conference on Information Fusion, Florence Italy, 10-13 July 2006.

Technical Paper Referee, *IEEE Transactions on Aerospace and Electronic Systems* and *International Conference on Information Fusion (FUSION 2006)*

Independent Reviewer, Pacific Northwest National Laboratories project for National Nuclear Security Administration (NNSA), Office of Nonproliferation Research and Development, Richland WA, 6 April 2006.

WHITE, EDWARD D., III

Associate Editor: *Journal of Cost Analysis and Management*

5.5 DEPARTMENT OF OPERATIONAL SCIENCES

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5.5.1 DOCTORAL DISSERTATIONS

BULLOCK, RICHARD K. *Theory of Effectiveness Measurement.* AFIT/DS/ENS/06-01, Faculty Advisor: Dr. Richard F. Deckro. Sponsor: HQ USAF/A9.

BURKS, ROBERT E. *An Adaptive Tabu Search Heuristic for the Location Routing Pickup and Delivery Problem with Time Windows with a Theater Distribution Application.* AFIT/DS/ENS/06-02, Faculty Advisor: Dr. James T. Moore. Sponsor: AFRL/AFOSR/NM.

*HAMILL, JONATHAN T. *Analysis of Layered Social Networks.* AFIT/DS/ENS/06-03, Faculty Advisor: Dr. Richard F. Deckro. Sponsor: AFRL/HECS and NASIC/FCEB.

SHERMAN, NATHAN P. *Analysis and Control of Unreliable, Single-Server Retrial Queues with Infinite-Capacity Orbit and Normal Queue.* AFIT/DS/ENS/06-05, Faculty Advisor: Dr. Jeffrey Kharoufeh. Sponsor: AFRL/AFOSR.

5.5.2 MASTERS THESES

5.5.2.1 LOGISTICS MANAGEMENT (GLM)

BANKS, DAWN L. *Relationships Between Organizational Commitment, Core Job Characteristics, and Organizational Citizenship Behaviors in United States Air Force Organizations.* AFIT/GLM/ENS/06-01, Faculty Advisor: Lt Col John Bell. Sponsor: N/A.

CHRISTENSEN, NEIL E. *Hazardous Material Cargo Frustration at Military Aerial Ports of Embarkation.* AFIT/GLM/ENS/06-02, Faculty Advisor: Lt Col John Bell. Sponsor: N/A.

CONE, WILLIAM D. *Improving Maintenance Data Collection Via Point-of-Maintenance (POMX) Implementation.* AFIT/GLM/ENS/06-03, Faculty Advisor: Lt Col John Bell. Sponsor: N/A.

DYE, MICHAEL T. *Perceptions of the Pure Pallet Program.* AFIT/GLM/ENS/06-04, Faculty Advisor: Dr. William Cunningham, III. Sponsor: HQ AMC/A43.

EVANS, MORGAN J. *Understanding Innovation Adoption in the Air Force.* AFIT/GLM/ENS/06-05, Faculty Advisor: Maj Kirk Patterson. Sponsor: HQ AMC/A43.

KIERPIEC, WENDY S. *An Exploratory Case Study of Information Sharing and Collaboration within Air Force Supply Chain Management.* AFIT/GLM/ENS/06-06, Faculty Advisor: Dr. Stephan Brady. Sponsor: N/A.

MAHON, LISA J. *Comparison of Variance-to-Mean Ratio Methods for Reparable Inventory Management.* AFIT/GLM/ENS/06-07, Faculty Advisor: Maj Bradley Anderson. Sponsor: HQ AFMC/A8S.

MARTIN, MICHAEL H. *Implementing Reliability Centered Maintenance Analysis in a Revised Preventive Maintenance Program for the F-15.* AFIT/GLM/ENS/06-08, Faculty Advisor: Dr. William Cunningham. Sponsor: AFMC/330 FS.

Mc CRAINE III, RODNEY E. *Factors Affecting the Transfer of Basic Combat Skills Training in the U.S. Air Force.* AFIT/GLM/ENS/06-09, Faculty Advisor: Maj Kirk Patterson. Sponsor: HQ USAF/A4R.

OVERHOLTS II, DALE L. *Improving Inter-Continental Ballistic Missile Maintenance Scheduling through the Use of Location Analysis Methodologies*. AFIT/GLM/ENS/06-11, Faculty Advisor: Lt Col Marvin Arostegui. Sponsor: ACC/20 AF/A4.

PASTIKA, DAVID J. *Hazardous Materials Transportation: A Meta-Analysis of State Level Policy and Regulation.* AFIT/GLM/ENS/06-10, Faculty Advisor: Lt Col John Bell. Sponsor: N/A.

PENDLEY, SCOTTY A. *Factors and Interactions that Affect Air Force C-17 Air Craft Mission Capable Rates.* AFIT/GLM/ENS/06-12, Faculty Advisor: Dr. Alan Johnson. Sponsor: HQ AFMC/A44A.

PENNINGTON, JASPER E. *Access Based Cost Estimation for Beddown Analysis*. AFIT/GLM/ENS/06M-13, Faculty Advisor: Dr. Alan Johnson. Sponsor: HQ AFMC/A75R.

POPE III, JOHN T. *Discrete Event Simulation Model of the Ground Maintenance Operations Cycle of a Reusable Launch Vehicle.* AFIT/GLM/ENS/06-14, Faculty Advisor: Dr. Alan Johnson. Sponsor: AFRL/VAOT.

ROMERO, MARGARET M. *Algebra of Tankers.* AFIT/GLM/ENS/06-15, Faculty Advisor: Dr. Alan Johnson. Sponsor: AFOSR/NM & AMC/A-59.

STIEGELMEIER, ADAM T. *A Discrete Event Simulation Model for Evaluating Air Force Reusable Military Launch Vehicle Pre-launch Operations.* AFIT/GLM/ENS/06-16, Faculty Advisor: Dr. Alan Johnson. Sponsor: AFRL/VAOT.

WHITE, DAMELSA D. *Headquarters Air Force Material Command Customer Relationship Management Study.* AFIT/GLM/ENS/06-17, Faculty Advisor: Lt Col John Bell and Maj Kirk Patterson. Sponsor: AFMC/A4S.

5.5.2.2 OPERATIONS RESEARCH (GOR)

ANASTASIOU, ALEXANDER B. *Modeling Urban Warfare: Joint Semi-Automated Forces in Urban Resolve.* AFIT/GOR/ENS/06-01, Faculty Advisor: Dr. John Miller. Sponsor: N/A.

BANG, SUNG WAN. *Coalition Modeling in Humanitarian Assistance Operations.* AFIT/GOR/ENS/06-02, Faculty Advisor: Dr. Richard Deckro. Sponsor: N/A.

BENTSON, KJIRSTIN A. *An Epidemiological Approach to Terrorism.* AFIT/GOR/ENS/06-03, Faculty Advisor: Dr. Stephen Baumert. Sponsor: N/A.

BOOHER, TIMOTHY B. *Optimal Periodic Inspection of a Stochastically Degrading System.* AFIT/GOR/ENS/06-04, Faculty Advisor: Dr. Jeffrey Kharoufeh. Sponsor: N/A.

CARRAS Jr., MICHAEL V. *BDA Enhancement Methodology using Situational Parameter Adjustments.* AFIT/GOR/ENS/06-05, Faculty Advisor: Dr. Marcus Perry. Sponsor: US ARMY/TRADOC.

DOWNS, DONEDA D. *Gauging the Commitment of Clandestine Group Members*. AFIT/GOR/ENS/06-06, Faculty Advisor: Dr. Richard Deckro. Sponsor: AFRL/HECS & NASIC/FC.

ERWIN, MICHAEL C. *Combining Quality of Service and Topology Control in Directional Hybrid Wireless Networks.* AFIT/GOR/ENS/06-07, Faculty Advisor: Lt Col Raymond Staats. Sponsor: AFRL/AFOSR.

FLORY, JOHN A. Optimizing Mean Mission Duration for Multiple-Payload Satellites. AFIT/GOR/ENS/06-08, Faculty Advisor: Dr. Jeffrey Kharoufeh. Sponsor: SAF/FMBMB.

GASTELUM, JASON A. *A Risk Assessment Methodology for Divesting Military Capability to Allied Nations.* AFIT/GOR/ENS/06-09, Faculty Advisor: Lt Col David Denhard. Sponsor: OSD/PA&E.

HINSHAW, HUYNH A. *Classification Characteristics of Carbon Nanotube Polymer Composite Chemical Vapor Detectors.* AFIT/GOR/ENS/06-10, Faculty Advisor: Dr. Kenneth Bauer. Sponsor: AFRL/MLPJ.

HONABARGER, JASON B. *Modeling Network Centric Warfare (NCW) with the System Effectiveness Analysis Simulation (SEAS).* AFIT/GOR/ENS/06-11, Faculty Advisor: Dr. John Miller. Sponsor: ASC/XR.

JONES, ROBERT D. *Assessing Resource Value and Relationships between Objectives in Effects-Based Operations.* AFIT/GOR/ENS/06-12, Faculty Advisor: Lt Col David Denhard. Sponsor: AFRL/IFSA.

MAYHALL, SANDRA A. Modeling a Repairable Study Chain and Applying CPFR Concepts. AFIT/GOR/ENS/06-22, Faculty Advisor: Dr. William Cunningham, III. Sponsor: N/A.

MCLAMB, WILBURN B. *Reducing Uncertainty in Effects-Based Operations*. AFIT/GOR/ENS/06-13, Faculty Advisor: Lt Col David Denhard. Sponsor: AFRL/IFSA.

MURPHY, TONY A. *Analysis of Patient Information: An Empirical Modeling Approach.* AFIT/GOR/ENS/06-14, Faculty Advisor: Dr. Sharif Melouk. Sponsor: N/A.

O'LEARY, STEPHEN T. *A Multi-Pass Construction Heuristic for the Aggregated Airlift Problem.* AFIT/GOR/ENS/06-15, Faculty Advisor: Maj Gary Kinney. Sponsor: AEFC/CC.

RUCKER, JEFFREY E. Using *Agent-Based Modeling to Search for Elusive Hiding Targets.* AFIT/GOR/ENS/06-16, Faculty Advisor: Dr. John Miller. Sponsor: SAF/XCOM.

STEEGER, GREGORY M. *Reliability of Systems using Event Occurrence Networks.* AFIT/GOR/ENS/06-17, Faculty Advisor: Lt Col David Denhard. Sponsor: N/A.

THARALDSON, DEREK D. *Optimization of a Multi-Echelon Repair System Via Generalized Patterned Search with Ranking and Selection: A Computational Study.* AFIT/GOR/ENS/06-18, Faculty Advisor: Dr. James Chrissis. Sponsor: N/A.

THARALDSON, MARYKATHRYN W. *Strategic Airlift En Route Analysis to Support the Global War on Terrorism using a Value Focused Thinking Approach*. AFIT/GOR/ENS/06-19, Faculty Advisor: Lt Col Raymond Staats. Sponsor: AFRL/AFOSR.

THOELE, BENJAMIN A. *A Methodology for Performing Effects-Based Assessments.* AFIT/GOR/ENS/06-20, Faculty Advisor: Lt Col David Denhard. Sponsor: AFRL/IFSA.

WEINSTEIN, AMANDA L. *Exploring Tanker Fleet Mixes and CONOPS: A Value-Focused Thinking Study.* AFIT/GOR/ENS/06-21, Faculty Advisor: Lt Col Raymond Staats. Sponsor: AFRL/VAOT.

5.5.2.3 RESEARCH AND DEVELOPMENT MANAGEMENT (GRD)

GAMACHE, JOYCE A. *Review of the Joint Capabilities Integration Development System (JCIDS) and the National Security Space Acquisition Policy (NSSAP).* AFIT/GRD/ENS/06-01, Faculty Advisor: Dr. Stephan Brady. Sponsor: N/A.

5.5.3 GRADUATE RESEARCH PAPERS

GRADUATE LOGISTICS MANAGEMENT (ILM)

CLARK, DANIEL P and UDUAK I. UDOAKA. *Supporting the Objective Force with the C-17: A Study to Determine Opportunities for Innovation.* AFIT/ILM/ENS/06-01, Faculty Advisor: Dr. James Moore. Sponsor: N/A.

CLAXTON, JOHN C. *Operational Analysis of Tactical Satellite Orbit Populations.* AFIT/ILM/ENS/06-02, Faculty Advisor: Dr. Alan Johnson. Sponsor: AFRL/VS.

COLEMAN, TODD L. and JERRY C. STONECIPHER, *A Comparison of the Air Force Institute of Technology and Civilian Institutions Graduate Logistics Curricula.* AFIT/ILM/ENS/06-03, Maj Kirk Patterson. Sponsor: N/A.

DAWSON, GARY R. *Project Angel Fire: Concept of Operations in a Permissive Tactical Environment.* AFIT/ILM/ENS/06-04, Faculty Advisor: Dr. Michael Hicks. Sponsor: US STRATCOM.

GREENLEE, JOSEPH W. *Push vs. Pull Supply Distribution in the Stryker Brigade Combat Team.* AFIT/ILM/ENS/06-10, Faculty Advisor: Maj Shane Knighton and Maj Barry Brewer. Sponsor: N/A.

HETKE, DALE E. and JACQUELINE M. MONGEON *Implementing Aircraft Modifications: Delivering Timely and Effective Support.* AFIT/ILM/ENS/06-05, Facutly Advisor: Lt Col John Bell. Sponsor: N/A.

KEFFER, RICHARD E. *Multifunctional Medium-Heavy Transportation Company.* AFIT/ILM/ENS/06-06, Faculty Advisor: Dr. James Moore. Sponsor: N/A.

KING Jr., DENNIS C. *"Look Out Below!" An Analysis of the Joint Precision Airdrop System with 2K Precision Parachute Systems.* AFIT/ILM/ENS/06-07, Faculty Advisor: Dr. James Moore. Sponsor: AMC/A3DT and NSC/JPADS/ACTD.

MARTINDALE, MICHAEL J. *A Discrete-Event Simulation Model for Evaluating Air Force Reusable Military Launch Vehicle Post-Landing Operations.* AFIT/ILM/ENS/06-09, Faculty Advisor: Dr. Alan Johnson. Sponsor: AFRL/VA.

MONGEON, JACQUELINE M. see HETKE, DALE E.

RIGDON, AARON M. and MICHAEL V. WAGGLE. *Municipal Regulation of Hazardous Materials Due to the Threat of Terrorism and its Effects on the Rail Industry.* AFIT/ILM/ENS/06-12, Faculty Advisor: Lt Col John Bell. Sponsor: N/A.

SANDLIN, DORAL E. and THOMAS D. TORKELSON. *The Trade-Offs of Tanker Air-Refuelability*. AFIT/ILM/ENS/06-13, Faculty Advisor: Dr. Alan Johnson. Sponsor: AMC/A59T.

SHERIDON, JAMES D. *Civil Reserve Air Fleet (CRAF): A Participation Analysis 1986-2005.* AFIT/ILM/ENS/06-14, Faculty Advisor: Dr. William Cunningham, III. Sponsor: N/A.

SPRINGER, STANLEY A. *F-22 Aircraft Utilization Impacts from Scheduled and Unscheduled Structural Inspection Implementation.* AFIT/ILM/ENS/06-15, Faculty Advisor: Dr. Alan Johnson. Sponsor: F22 SPO.

STONECIPHER, JERRY C. see COLEMAN, TODD L.

SULLIVAN, CHRISTOPHER B. *Headquarters Air Force Materiel Command Relationship Management.* AFIT/ILM/ENS/06-17, Faculty Advisor: Lt Col John Bell. Sponsor: AFMC/A4SP.

TORKELSON, THOMAS D. see SANDLIN, DORAL E.

UDOAKA, UDUAK I. see CLARK, DANIEL P.

WAGGLE, MICHAEL V. see RIGDON, AARON M.

WALKER, BRIAN P. *A Study of Air Force Forward Operating Locations from a Combatant Commander's Perspective.* AFIT/ILM/ENS/06-21, Faculty Advisor: Maj Barry Brewer. Sponsor: HQ USAF.

WHITE, ROBERT T., JOSEPH G. BEAHM (ENY) and BRET D. ANDERSON (ENY) *Capability Optimization of the USAF's F-15C Fleet within a Constrained Budget.* AFIT/ILM/ENS/06-22, Faculty Advisors: Lt Col John Colombi and Dr. Dennis Strouble. Sponsor: F-15 SG/VA.

GRADUATE MOBILITY OPERATIONS (IMO)

(NOTE: The Graduate Mobility Operations (IMO) non-thesis management program is a component of Air Command's Advanced Study of Air Mobility executive development program. Students in the IMO program write graduate research papers supporting topics of interest to AMC.)

COLLINS, BRIAN D. *The Impact of Integrated Flight Management on Air Mobility Operations.* AFIT/IMO/ENS/06E-01, Faculty Advisor: Dr. James Moore. Sponsor: AMC/A3.

CROFT, EUGENE M. *Efficiency and Effectiveness of Intratheater Airlift in Operation Iraqi Freedom – The CDDOC- A Doctrinal Change.* AFIT/IMO/ENS/06E-02, Faculty Advisor: Maj Kirk Patterson. Sponsor: US TRANSCOM/ J3.

DABROWSKI, PATRICK W. *Optimizing Real Time Information in the Cockpit (RTIC) Data In Future Air Mobility Command Situational Awareness Systems.* AFIT/IMO/ENS/06E-03, Faculty Advisor: Dr. Rosa Birjandi. Sponsor: AMC/A5Q.

DERMER, JAMES B. *Hurricane Katrina: A Lesson in Disaster Preparedness.* AFIT/IMO/ENS/06E-04, Faculty Advisor: Dr. William Cunningham, III. Sponsor: USAF EOS/CC

FELTER, KEITH N. *Application of Lean Principles to the C-130 Formal Training Unit.* AFIT/IMO/ENS/06E-05, Faculty Advisor: Dr. Alan Heminger. Sponsor: 314 AW and 314 OG.

FINCH, MICHAEL J. *Applying Air Force Smart Operations for the 21st Century (AFSO21) to the Mobility Air Forces Tactics Development Process.* AFIT/IMO/ENS/06E-06, Faculty Advisor: Dr. Alan Heminger. Sponsor: N/A.

GAAB, SCOTT A. *Improving the Efficiency and Effectiveness of the United States Military's Humanitarian Relief Supply Chain.* AFIT/IMO/ENS/06E-07, Faculty Advisor: Dr. James Moore. Sponsor: US TRANSCOM/J5.

HANSON, DAVID S. *Tip of the Mobility Spear – Developing Joint Precision Airdrop Capability.* AFIT/IMO/ENS/06E-08, Faculty Advisor: Dr. James Moore. Sponsor: AMC.

HEASTER, WILLIAM C. *Tanker Employment Evolution: Operation Desert Storm Through Operation Iraqi Freedom.* AFIT/IMO/ENS/06E-09, Faculty Advisor: Dr. James Moore. Sponsor: HQ USAF/A1M.

JOHNSON, ROGER F. *Accelerating the Transition from Mission Support Group Commander to Air Expeditionary Group Commander.* AFIT/IMO/ENS/06E-10, Faculty Advisor: Maj Kirk Patterson. Sponsor: USAF AEFC/CC.

LONG, PERRY M. *Contingency Response Groups and the Humanitarian Assistance/Disaster Response Mission: A Case Study.* AFIT/IMO/ENS/06E-11, Faculty Advisor: Dr. William Cunningham, III. Sponsor: USAF EOS/CC.

LUKES, CLARENCE W. *The Future Light Cargo Aircraft.* AFIT/IMO/ENS/06E-12, Faculty Advisor: Lt Col Donald Duckro. Sponsor: US TRANSCOM.

MOSS, KENNETH E. *Aerial Prepositioning of War Material.* AFIT/IMO/ENS/06E-13, Faculty Advisor: Dr. Stephen Brady. Sponsor: OUSD/LPP.

PLATTE, JOHN M. *Accelerating the Flow of U.S. Army Tactical Wheeled Vehicle Armor to the Warfighter: A Case Study in Overcoming Barriers to Successful Supply Chain Management.* AFIT/IMO/ENS/06E-14, Faculty Advisor: Maj Kirk Patterson. Sponsor: USTRANSCOM/J3.

PREVETT, TYLER T. *Sealift or Airlift for Global Mobility?* AFIT/IMO/ENS/06E-15, Faculty Advisor: Maj Bradley Anderson. Sponsor: US TRANSCOM/J3-R.

RAPP, TIMOTHY J. *Analysis of Hybrid Ultra Large Aircraft's Potential Contribution to Intertheater Mobility.* AFIT/IMO/ENS/06E-16, Faculty Advisor: Dr. James Moore. Sponsor: JS/VJ4.

GRADUATE OPERATIONS ANALYSIS (IOA)

BAUER II, KURT P. *Using Remote Sensing for Nuclear Event Attribution.* AFIT/IOA/ENP/06-01, Faculty Advisor: Dr. James Petrosky. Sponsor: N/A.

FRYMIRE, MICHAEL B. *Analysis of Alternatives for the Joint Cargo Aircraft A Value-Focused Thinking Approach.* AFIT/IOA/ENS/06-01, Faculty Advisor: Maj Shane Knighton. Sponsor: HQAF A5XC-GM.

HIGGINBOTHAM, DAVID L. and DOUGLAS W. WARNOCK Jr. *Predicting Retention of USAF Critical Skills Officers.* AFIT/IOA/ENS/06-02, Faculty Advisor: Maj Robert Neher. Sponsor: HQ USAF/A1PF.

KENT, GREG A. *Model of AWACS Programmed Flying Training.* AFIT/IOA/ENS/06-03, Faculty Advisor: Maj Gary Kinney. Sponsor: 552 ACW.

LEVY, CHRISTOPHER P. *A Comparison Study of F-15C Fighter Squadron Ready Aircrew Program Flying Hour Scheduling vs. The RAND Corporation's Flying Hour Scheduling Linear Program.* AFIT/IOA/ENS/06-04, Faculty Advisor: Lt Col Raymond Staats. Sponsor: 1 OSS/CC.

MARION, MARIA C. *Validation of Selected Sample Agent Rules in EAAGLES.* AFIT/IOA/ENS/06-05, Faculty Advisor: Dr. John Miller. Sponsor: SIMAF.

McGLADE, PATRICK E. *Effects-Based Operations versus Systemic Operational Design: Is There a Difference?* AFIT/IOA/ENS/06-06, Faculty Advisor: Lt Col David Denhard. Sponsor: AFRL/IF.

MESSER, MICHAEL G. *Improving the UPT Student Follow-On Assignment Selection Process.* AFIT/IOA/ENS/06-07, Faculty Advisor: Dr. John Miller. Sponsor: 80 FTW & AETC/A3FI.

MIRAVITE Jr., ALEXANDER and CHARLES F. SCHLEGEL. *Global En Route Basing Infrastructure Location Model.* AFIT/IOA/ENS/06-08, Faculty Advisor: Lt Col Raymond Staats. Sponsor: US TRANSCOM JT/TCJ5-A5.

*PERIS, WILLIAM E. and SANDY J. RICHARDSON. *F-22 Combined Test Force Options to Improve Flight Test Efficiency.* AFIT/IOA/ENS/06-09, Faculty Advisor: Lt Col David Denhard. Sponsor: ASC/YF.

REYNOLDS, GEORGE M. *An Inventory Management Paradigm for Advanced Academic Degree Officer*s. AFIT/IOA/ENS/06-10, Faculty Advisor: Lt Col Raymond Staats. Sponsor: AFIT/CC

RICHARDSON, SANDY J. see PERIS, WILLIAM E.

SCHLEGEL, CHARLES F. see MIRAVITE Jr., ALEXANDER

STEWART, MELANIE J. *Effective Teaming for Expeditionary Combat Support.* AFIT/IOA/ENS/06-11, Faculty Advisor: Maj Gary Kinney. Sponsor: N/A.

STONE, DAVID A. *Creating a Linear Model to Optimize Satellite Communication Bandwidth Utilization.* AFIT/IOA/ENS/06-12, Faculty Advisor: Lt Col David Denhard. Sponsor: JCS/J6CS

TROXELL, AARON D. *Advance Academic Degree Inventory Model.* AFIT/IOA/ENS/06-13, Faculty Advisor: Lt Col Raymond Staats. Sponsor: AFIT/CC.

WAITE, RALPH J. *Viper Way Ahead.* AFIT/IOA/ENS/06-14, Faculty Advisor: Maj Gary Kinney. Sponsor: 56 OG/CC.

WARNOCK Jr., DOUGLAS, see HIGGINBOTHAM, DAVID.

5.5.4 FUNDED RESEARCH PROJECTS

BAUER, KENNETH W., Jr.

"Classification and Fusion Based Methods for the Analysis of Hyperspectral and Polarimetric Imagery". Sponsor: SAF/FMBMB-AFOY. Funding: $210,000. [COA]

"Sensor Fusion for Automatic Target Recognition". Sponsor: ESC. Funding: 23,000. [COA]

"Sensor Fusion for Automatic Target Recognition". Sponsor: AFOSR. Funding: 50,000. [COA]

DECKRO, RICHARD F.,

"Operations Research in Support of the NSA". Sponsor: NSA. Funding: $20,000.

"SNA and Behavioral Modeling MOA". Sponsor: AFRL. Funding: $111,000.

DENHARD, DAVID R., Lt Col

AFIT Support to AFRL Effects-Based Operations Program". Sponsor: AFRL/IF Funding: $22,310.00 [COA]

JOHNSON, ALAN W.,

"Reusable Military Launch Vehicle Logistics." Sponsor: AFRL/VA. Funding: $35,000.

KHAROUFEH, JEFFREY P.,

"Analysis and Optimal Control of Unreliable Retrial Queuing Systems." Sponsor: AFRL/AFOSR. Funding: $39,114.

"Optimizing Mean Mission Duration Specification for Multiple-Payload Satellites." Sponsor: SAF/FMBMB-AFOY. Funding: $32,000.

MILLER, JOHN O.,

"AFIT Faculty Support to Command and Control Research". Sponsor: AFRL/IF. Funding: $19,000. [COA]

"Air Force Standard Analysis Toolkit (AFSAT) Support". Sponsor: AF/XC. Funding: $12,000. [COA]

"Air Force Standard Analysis Toolkit (AFSAT) Support". Sponsor: AF/XC. Funding: $53,000. [COA]

MOORE, JAMES T.,

"Adaptive Filter using Wavelets with Genetic Algorithms". Sponsor: AFOSR. Funding: $50,000. [COA]

"Application of Metaheuritstics to Air Force Problems". Sponsor: AFOSR. Funding: $50,000. [COA]

PATTERSON, KIRK A., Maj

"Customer Relationship Management Study." Sponsor: AFMC. Funding: $23,550.

5.5.5 REFEREED JOURNALS

BAUER, KENNETH W., Jr,

*C. Brian Bassham, Kenneth W. Bauer, Jr., and J. O. Miller , "Automatic Target Recognition System Evaluation Using Decision Analysis Techniques", Military Operations Research, Vol 11, No. 1, 2006. [COA]

Hoffman D. L., Bauer K. W., S. P. Chambal, "Using Neural Networks for Estimating Cruise Missile Reliability", Military Operations Research, Vol 10, No 3, 2005, pp. 5-24. [COA]

Laine, T.I. and K.W. Bauer, "Input Feature Selection for Automatic Target Recognition of Temporal Data," Military Operations Research, Vol 10, No 2, 2005. [COA]

CUNNINGHAM, WILLIAM A., III

"Comparing ERP Supply-Chain Management Solutions" (with Patrick Holland and Kirk Patterson), Air Force Journal of Logistics, Spring 2005, Vol. XXVIV, No.1.

DECKRO, RICHARD F.,

Richard K. Bullock and Richard F. Deckro, "Foundations for System Measurement", *Measurement,* Vol. 39, No. 8 (2006), pp 701-709.

JOHNSON, ALAN W.,

Mongold, M. and A. Johnson, 2006, "Pure Pallet Impact on the Effectiveness and Efficiency of the Defense Transportation System" *Journal of Transportation Management* 17(1): 18-30. [COA]

Guarnieri, J., Johnson A., and Swartz, S., 2006, "A Maintenance Resources Capacity Estimator", *Journal of the Operational Research Society* 57(10): 1188-1196. [COA]

KHAROUFEH, JEFFREY P.,

Kharoufeh, J.P., Finkelstein, D. and D. Mixon (2006), Availability of periodically inspected systems with Markovian wear and shocks. *Journal of Applied Probability*, 43 (2), 303-317.

*Peterson, B.S., Baldwin, R.O. and J.P. Kharoufeh (2006). Bluetooth inquiry time characterization and selection. *IEEE Transactions on Mobile Computing*, 5 (9), 1173-1187.

Flannery, A., Kharoufeh, J.P., Elefteriadou, L. and N. Gautam (2005). Queuing delay models for single-lane roundabouts. *Civil Engineering and Environmental Systems*, 22 (3), 133-150.

KINNEY, GARY W. Jr., Maj,

*G W Kinney Jr., R R Hill, and J T Moore, "Devising a quick-running heuristic for an unmanned aerial vehicle (UAV) routing system" *Journal of the Operational Research Society* 56(7) 776-786. (2005). [COA]

MILLER, JOHN O.,

*Bassham, C. Brian, Bauer, K.W. Jr, and Miller, J.O. "Automatic Target Recognition System Evaluation Using Decision Analysis Techniques," *Military Operations Research*, Vol 11, No.1, pp. 49-66, 2006. [COA]

MOORE, JAMES T.,

Baltacioğlu, E, J. T. Moore, and R. R. Hill, "The Distributor's Three-Dimensional Pallet-Packing Problem: A Human Intelligence-Based Heuristic Approach", *International Journal of Operational Research*, 1 (3): 249-266 (2006). [COA]

*G W Kinney Jr., R R Hill, and J T Moore, "Devising a quick-running heuristic for an unmanned aerial vehicle (UAV) routing system" *Journal of the Operational Research Society* 56(7) 776-786. (2005). [COA]

Harwig, J. M., J. W. Barnes, and J. T. Moore, "An Adaptive Tabu Search Approach for 2–Dimensional Orthogonal Packing Problems", *Military Operations Research* 11 (2): 5-26 (2006). [COA]

PERRY, MARCUS B.,

Estimation of the Change Point of a Poisson Rate Parameter with a Linear Trend Disturbance, M. B. Perry, J. J. Pignatiello Jr. and J. R. Simpson. *Quality and Reliability EngineeringInternational* (2006): **22**(4), pp 371-384

M. B. Perry and J. J. Pignatiello, Jr. "Estimation of the Change Point of a Normal Process Mean with a Linear Trend Disturbance innSPC," *Quality Technology and Quantitative Management*: Special Issue on Control Charts, Sept 2006, Vol. 3. No. 3, pp 325-224

THOMAS, MARLIN U.,

Thomas, M.U. and J.P. Richard, "Warranty Based Method for Establishing Reliability Improvement Targets," *IIE Transactions*, Vol. 38, No. 12, 2006, pp. 1049-1058

Thomas, M.U., "Engineering Economic Decisions and Warranties," *Engineering Economist*, Vol. 50, No. 4, 2005, pp. 307-326

5.5.6 OTHER PUBLICATIONS

BREWER, BARRY L., Maj

Brewer, Barry and Joseph Carter, (2006) "Building a Measure of Direct Materials Procurement Outsourcing Factors: A Contract Manufacturing Perspective," Proceedings 17th Annual North American Research / Teaching Symposium, 15th International Purchasing and Supply Education and Research Association conference, and the 4th Worldwide Research Symposium in Purchasing & Supply Chain Management

DECKRO, RICHARD F.,

Deckro, Richard F., "Changes", *Phalanx*, Vol. 39, No. 3 (September, 2006), p. 4.

Deckro, Richard F., "Selling Analysis", *Phalanx*, Vol. 39, No. 2 (June, 2006), p. 4 & 30.

Deckro, Richard F., "Challenges for the Long War", *Phalanx*, Vol. 39, No. 1 (March, 2006), p. 4.

Deckro, Richard F., "Societal Military Applications", *Phalanx*, Vol. 38, No. 4 (December, 2005), p. 4 & 6.

Butler, Rudolph "Reb", Deckro, Richard F., and Weir, Jeffrey, "Using Decision Analysis to Increase Commander's Confidence for Employment of Computer Network Operations", *IO Sphere*, Fall.

JOHNSON, ALAN W.,

Johnson, A., Jacobs, T., Stiegelmeier, A., Pope, J., and M. Martindale, 2006, "Simulating Reusable Military Launch Vehicle Regeneration Activities between Flights," *Proceedings of the American Institute of Aeronautics and Astronautics Space 2006 Symposium, San Jose CA,* AIAA-2006-7230. [COA]

*Stiegelmeier, A., J. Pope, A. Johnson, S. Melouk, S. Brady, and S. Griffis, 2006, Discrete Event Simulation Modeling for Air Force Reusable Military Launch Vehicle Evaluation, *Proceedings of the April, 2006 Western Decision Sciences Institute Conference, Waikoloa HI,* 391-395. [COA]

*Brigantic, R., Doctor, P., Campbell, J., Johnson, A., and P. Coomber, 2006, "An Assessment of Hickam Air Force Base's Capability to Support Strategic Airlift Throughput when Operating under an Avian Flu Pandemic," *Proceedings of the April, 2006 Western Decision Sciences Institute Conference, Waikoloa HI*, 418-422. [COA]

KHAROUFEH, JEFFREY P.,

Kharoufeh, J.P. and N.P. Sherman (2006), Performance analysis and control of an unreliable M/G/1 retrial queue. *Proceedings of the 2006 Industrial Engineering Research Conference*, Orlando, FL, May 13-16.

KINNEY, GARY W. Jr., Maj

Gary Kinney, J.W. Barnes, and Bruce Colletti, "Reactive Tabu Search Algorithm with Variable Clustering for the Unicost Set Covering Problem", *forthcoming in International Journal of Operational Research.* [COA]

MELOUK, SHARIF H.,

*Melouk, S., M. Perry, and T. Murphy. (2006). Analysis of Patient Information: An Empirical Modeling Approach. Proceedings of the 2006 Industrial Engineering Research Conference.

*Stiegelmeier, A., A. Johnson, S. Melouk. (2006). Discrete-Event Simulation Modeling for Air Force Reusable Military Launch Vehicle Evaluation. Proceedings of the 2006 Western Decision Sciences Institute Research Conference.

5.5.7 SUBSTANTIAL CONSULTATIONS

ANDERSON, BRADLEY E., Lt Col

Anderson, Bradley E., Worked with HQ AFMC/A8S on prior research work for Non-Optimized (NOP) items in Materiel Readiness Support Packages (MRSPs). Per their 2005 annual report, currently used NOP formulas were corrected and recommendations were made for future policies (May 2006). [COA]

Anderson, Bradley E., Merged decision theory and different models of decision making in developing an Analytic Network Process (ANP) model of the strategic mobility decision model that helps TRANSCOM choose between sealift and airlift for global mobility in the selection of air or sealift options (Mar 2006). [COA]

DECKRO, RICHARD F.

Deckro, Richard F., Participated in Human Factors Integrated Process Team Quarterly Meeting, U. S. Central Command, MacDill AFB, August 2006.

Deckro, Richard F., Outside reviewer of *Developing Modeling, Simulation, and Analysis: Meeting the Challenge* for the National Research Council of the National Academies, June 2006.

Deckro, Richard F., Reviewed draft BAA and provided comments for AFOSR, May 2006.

Deckro, Richard F., Invited participate in a meeting on *The National R&D Strategy for Regional Stability and Capacity Building*, with a primary focus on the interagency development, objectives and structure of the *Regional Stability Assessment Teams* (RSAT). Meeting was chaired Dr. George Atkinson, the Science and Technology Adviser to the Secretary of State (STAS) as part of a broad outreach on the R&D strategy concept developed by an interagency working group jointly led by State (STAS) and DOD (USACE), March 2006.

Deckro, Richard F., At request of NASIC/FCEB attend HT VTC brief 17 Feb 06 in support of briefing on FCEB's influence analysis effort. As a result of interaction, provided additional inputs to the Joint Staff.

Deckro, Richard F., Proposal Evaluator for AFOSR -MURI topic "Dynamic, Adaptive Techniques for Adversary Behavior Modeling", December 2005.

Deckro, Richard F., Working Group Leader – Traditional Approaches**,** Interagency Working Group on R&D for Regional Stability - Workshop on Models, Simulations, Games and Tools for Regional Stability, Arlington, December 2005. (Interagency is DOD and STAS).

Deckro, Richard F., Member of Advisory Group on Applications, GMU/CMU MURI "Computational Modeling of Cultural Dimensions in Adversary Modeling" Participated in advisory board meeting. November, 2005.

MILLER, JOHN O.,

Miller, J.O., Led working group to develop Use Case for HPC in constructive combat modeling, HPC Forces Modeling Simulation IPT, Orlando, FL. Mar 9-10. [COA]

Miller, J.O., AFIT representative on DoD M&S Workforce Development Team/Focus Group, DoD M&S Conference, Baltimore, MD, May 1-5. [COA]

5.5.8 PRESENTATIONS

ANDERSON, BRADLEY E., Lt Col

Anderson, Bradley E., "A Simple Heuristic for Sequence Dependent Setup Scheduling on Multiple Machines with an Earliness and Tardiness Objective," accepted for publication in the proceedings and presented at the National Decision Sciences Institute (DSI) Annual Meeting in San Francisco, CA Nov, 2005. [COA]

Anderson, Bradley E., "The Operational Impact of Mobility Readiness Spares Package Configuration During Operation Iraqi Freedom" accepted for publication in the proceedings and presented at the Western Decision Sciences Institute (WDSI) Annual Meeting in Waikoloa, HI Apr, 2006. [COA]

BAUER, KENNETH W., Jr

Smetek, Timothy and Bauer, Kenneth, "Improved Hyperspectral Target Detection using Optimization and Applied Statistical Methods," 74 MORS Symposium, United States Air Force Academy, Colorado Springs, Colorado, 13-15 June 2006. [COA]

Albrecht, Timothy and Bauer, Kenneth, "Synthetic Aperture Radar Automatic Target Recognition with Out-of-Library Targets and Pose Estimation," 74 MORS Symposium, United States Air Force Academy, Colorado Springs, Colorado, 13-15 June 2006. [COA]

*F. M. Mindrup, K. Bauer, M. Oxley, "An Investigation of the Effects of Correlation and Autocorrelation on Classifier Fusion with Non-Declarations", *Proceedings of the Artificial Neural Networks in Engineering Conference (ANNIE 2004)*, Editors: C. Dagli, D. Enke, A. Buczak, M. Embrechts, O. Ersoy, paper TP2.1A, St. Louis, MO, 6-9 November 2005. [COA]

BREWER, BARRY L., Maj

Brewer, Barry and Joseph Carter, (2006) "Building a Measure of Direct Materials Procurement Outsourcing Factors: A Contract Manufacturing Perspective," 17th Annual North American Research / Teaching Symposium, 15th International Purchasing and Supply Education and Research Association conference, and the 4th Worldwide Research Symposium in Purchasing & Supply Chain Management.

Brewer, Barry and Phil Carter (2006) "Taxonomy of Procurement Outsourcing" 37th Annual Meeting of Decision Sciences.

CHRISSIS, JAMES W.,

*J. Todd Hamill, Richard F. Deckro, Robert Mills, and James Chrissis, "A Reach-Based Approach to Screening Actors of Interest in Organizations", *74th Military Operations Research Society Symposium* presented in WG-32 Social Science Methods and WG-8 Information Operations/Information Warfare, June 2006.

CUNNINGHAM, WILLIAM A., III

Cunningham, William A. III, "Impact of Laser Peening First-Stage Fan Blades of F101-GE-102 Aircraft Gas Turbine Engine on FOD Prevention", Production and Operations Management Society 17th Annual Meeting, Boston, MA, April 2006.

DECKRO, RICHARD F.,

*Maj J. Todd Hamill, Richard F. Deckro, Robert Mills and James W. Chrissis, "An Operations Research Approach to a Key Player Problem" INFORMS Military Applications Society, *Homeland Security for the 21st Century,* Mystic CT, 24-26 July 2006.

*Major Richard Kelly Bullock., Richard F. Deckro, Robert F. Mills, and Lt Col Jeffery D. Weir, "Mathematical Framework for Measuring Effectiveness," *74th Military Operations Research Society Symposium,* June 2006.

*Major J. Todd Hamill, Richard F. Deckro, Robert Mills & James W. Chrissis, "A Reach-Based Approach to Screening Actors of Interest in Organizations", *74th Military Operations Research Society Symposium*, June 2006. Best Paper WG-8 Information Operations/Information Warfare.

Richard F. Deckro, "Behavioral Modeling and Measures", NASIC, 11 April 2006.

Dick Deckro, "Military Operations Research: Modeling & Simulation", *Interagency Working Group on R&D for Regional Stability - Workshop on Models, Simulations, Games and Tools for Regional Stability*, Arlington, December 15-16, 2005.

Major Richard 'Kelly' Bullock & Richard F. Deckro, "Methodology for Measuring Effectiveness", *INFORMS San Francisco*, November 2005.

Captain Matthew Robbins, Richard F. Deckro, Major Victor Wiley, "A Systems Dynamic Approach to Stabilization and Reconstruction", *INFORMS San Francisco*, November 2005.

Dick Deckro, "Transforming Intelligence Through Modeling of Social Networks", *SimSUMMIT! V*, Fort Meade, November 2005.

JOHNSON, ALAN W.,

Captain George Cole and A. Johnson, "Logistics Composite Model Variance Reduction", INFORMS National Meeting, November 4-8 2006, Pittsburgh. [COA]

Major Margaret M. Romero, A.W. Johnson, and R.T. Brigantic, "Rough-Cut Analysis Method for Tanker Aircraft Employment Operations", 74th MORS Symposium, 13-15 June 2006, Air Force Academy. [COA]

CMSGT Terry D. Moore and A.W. Johnson, "Examining the Impact of Quality Assurance Manning Practices in Air Force Aircraft Maintenance Units." 17th Annual Conference of POMS, 28 April-1 May 2006, Boston. [COA]

Major Margaret M. Romero and A.W. Johnson, "An Algebra of Tanker Aircraft Employment." INFORMS National Meeting, November 17-19 2005, San Francisco. [COA]

KHAROUFEH, JEFFREY P.,

Kharoufeh, J.P. and N.P. Sherman (2006), Performance analysis and control of an unreliable M/G/1 retrial queue. *Industrial Engineering Research Conference*, Orlando, FL, May 13-16, 2006.

Kharoufeh, J.P. (2006), Some limit theorems for a cumulative degradation process. Invited lecture. Department of Mathematics and Statistics, Wright State University, Dayton, OH, May 5, 2006.

Kharoufeh, J.P. (2006), Optimal periodic inspection of a system subject to wear and shock degradation. Invited lecture. Department of Systems and Information Engineering, University of Virginia, Charlottesville, VA, February 10, 2006.

*Kharoufeh, J.P. and M. Abramson (2005), Optimal periodic inspection of a system subject to wear and shock degradation. Invited session. *INFORMS Annual Meeting*, San Francisco, CA, November 13-16, 2005.

Sherman, N.P. and J.P. Kharoufeh (2005), An infinite-capacity retrial queue with unreliable server. *INFORMS Annual Meeting,* San Francisco, CA, November 13-16, 2005.

KINNEY, GARY W., Jr, Maj

Gary Kinney, J.W. Barnes, and Bruce Colletti, "Reactive Tabu Search Algorithm with Variable Clustering for the Unicost Set Covering Problem" Institute for Operations Research and Management Science Annual Conference in Pittsburgh. [COA]

MELOUK, SHARIF H.,

*Perry, M. and S. Melouk. (2005). Change Point Estimation for Monotonically Decreasing Exponential Rates in Statistical Process Control. INFORMS Conference, San Francisco, CA. November 2005.

*Stiegelmeier, A., A. Johnson, S. Melouk. (2006). Discrete-Event Simulation Modeling for Air Force Reusable Military Launch Vehicle Evaluation. Western Decision Sciences Institute Research Conference, Honolulu, HI. April 2006.

*Melouk, S., M. Perry, and T. Murphy. (2006). Analysis of Patient Information: An Empirical Modeling Approach. Industrial Engineering Research Conference, Orlando, FL. May 2006.

MILLER, JOHN O.,

Honabarger, Jason and Miller, J.O., "Modeling Network Centric Warfare (NCW) with SEAS," MORS Symposium, USAF Academy, CO, 13-15 Jun 2006. [COA]

Honabarger, Jason and Miller, J.O., "Modeling Network Centric Warfare (NCW) with SEAS," SEAS User's Group Meeting, San Pedro, CA, 27 April 2006. [COA]

Rucker, Jeffrey and Miller, J.O., "Using Agent-Based Modeling to Search for Elusive Hiding Targets," SEAS User's Group Meeting, San Pedro, CA, 27 April 2006. [COA]

Miller, J.O., "High Performance Computing (HPC) in Combat Modeling at AFIT," HPC Forces Modeling Simulation IMT, Orlando, FL, 9 -10 Mar 2006. [COA]

*Bauer, Kenneth W. Jr., Oxley, M., and Miller, J.O. "Sensor Fusion for Automatic Target Recognition," AFOSR Mathematics and Discrete Optimization Program Review, Fort Walton Beach, FL, 11-12 Mar 2006. [COA]

MOORE, JAMES T.,

*Weinstein, Amanda L., Raymond W. Staats, and James T. Moore, "A Value-Focused Examination of Air Force Tanker Fleet Mixes and CONOPS". Military Operations Research Society Symposium, Colorado Springs, CO, 13-15 June 2006. [COA]

Moore, James T., "Application of Metaheuristics to Air Force Problems", AFOSR Optimization and Discrete Mathematics Program Review, Fort Walton Beach, FL, 22-24 May 2006. [COA]

Burks, Robert E. and James T. Moore, "An Advanced Tabu Search Heuristic for Solving the Theater Distribution Problem", Institute for Operations Research and the Management Sciences (INFORMS) Conference, San Francisco, CA, 13-16 November 2005. [COA]

Havlicek, Jeffrey D. and James T. Moore, "Theater Aerial Refueling Vehicle Routing Models", Institute for Operations Research and the Management Sciences (INFORMS) Conference, San Francisco, CA, 13-16 November 2005. [COA]

PERRY, MARCUS B.,

*T. Murphy, S. H. Melouk, and M. B. Perry, "Analysis of Patient Information: An Empirical Modeling Approach." *IIE* Annual Conference, Orlando, FL, 2006.

*M. B. Perry and S. H. Melouk. "Change Point Estimation for Monotonically Decreasing Exponential Rates in SPC." *INFORMS* annual meeting, Nov 2005, San Francisco, CA.

THOMAS, MARLIN U.,

Ren, Kun and M.U. Thomas, "A cost reduction framework for product quality improvement in warranty management," INFORMS Annual Meeting, San Francisco, CA, November 16, 2005

Zhang, Lin and M.U. Thomas, "Lumpability approximation methods for Markov problems," INFORMS Annual Meeting, San Francisco, CA, November 16, 2005

5.5.9 BOOKS AND CHAPTERS IN BOOKS

THOMAS, MARLIN U.

Thomas, M.U., Reliability and Warranties: Methods for Product Development and Quality Improvement, Taylor & Francis, Baco Raton, 2006

5.5.10 OTHER SIGNIFICANT PROFESSIONAL ACTIVITIES

BELL, JOHN E., Lt Col

Technical Paper Reviewer: *Military Operations Research*; and *Western Decision Science*

Advisor: AFIT Sigma Iota Epsilon Chapter

Member: Decision Science Institute; INFORMS; Council of Supply Chain Management Professionals; and Logistics Officers Association

BREWER, BARRY L., Maj

Ad hoc Reviewer: Decision Sciences Journal

Reviewer: 18th Annual North American Research/Teaching Symposium on Purchasing and Supply Chain Management

CHRISSIS, JAMES W.,

Member: AIAA Multidisciplinary Design Optimization (MDO)

Reviewer: Technical Committee (TC) September 2006 AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference in Portsmouth, VA

Reviewer: MDO sessions at the January 2006 AIAA Aerospace Sciences Meeting in Reno, NV

Reviewer: April 2006 AIAA SDM Conference/MDO Specialist Conference in Newport, RI

Session Chair: January 2006 AIAA Aerospace Sciences Meeting in Reno, NV

Member: MDO/TC Education Subcommittee

CUNNINGHAM, WILLIAM A., III

Editorial Review Board for Air Force Journal of Logistics

Editorial Review Board for Journal of Transportation Management

Board of Examiners for the American Society of Transportation and Logistics

DECKRO, RICHARD F.,

Editor: *Military Operations Research*

President: Military Applications Society, INFORMS

Area Editor: Service Systems, *Computers & Industrial Engineering*

Member: MORS Publication Committee

Member: Peacekeeping and Stability Operations Institute Academic Consortium

Member: Advisory Group on Applications, GMU/CMU MURI "Computational Modeling of Cultural Dimensions in Adversary Modeling"

Organizing Committee Member: MORS Workshop, *Agent-Based Models and Other Analytic Tools in Support of Stability Operations*

Panelist/Sub-Group Leader: *Interagency Working Group on R&D for Regional Stability - Workshop on Models, Simulations, Games and Tools for Regional Stability*

DENHARD, DAVID R., Lt Col

Technical Paper Reviewer: *MORS*

JOHNSON, ALAN W.,

Manuscript reviewed: *European Journal of Operational Research*

KHAROUFEH, JEFFREY P.,

Associate Editor: *IEEE Transactions on Reliability*

Associate Editor: *Operations Research Letters*

Journal Reviewer: *Operations Research; IEEE Transactions on Reliability; IIE Transactions; Operations Research Letters; Military Operations Research*

Past President: Cincinnati/Dayton Chapter of the Institute for Operations Research and Management Science (INFORMS), Fall 2005-Fall 2006.

MELOUK, SHARIF H.,

Committee Member: Membership and Retention, INFORMS Simulation Society

Session Chair: INFORMS Military Applications Society Conference, Mystic, CT. July 24-26, 2006.

Reviewer: *2006 Industrial Engineering Research Conference* and *2006 Western Decision Sciences Institute Annual Conference*

Journal Reviewer: *European Journal of Operational Research; International Journal of Production Economics; Military Operations Research Society*

Representative: Dayton Area Graduate Studies Institute (DAGSI)

MILLER, JOHN O.,

Representative: INFORMS Simulation Society Council (elected position)

AFIT Representative: DoD and AF M&S Conference in Mar 06

Mentor: Wright Scholar Summer 2006

Associate Editor: *International Journal of Operations Research*

Journal referee: *Military Operations Research; International Journal of Logistics: Research and Applications; The Journal of Defense Modeling and Simulation*

MOORE, JAMES T.,

Program Co-chair: 2006 INOFRMS' Military Application Section Homeland Security Conference

Associate Editor: *Military Operations Research journal* and *International Journal of Operational Research*

PERRY, MARCUS B.,

Reviewer: *Computers and Industrial Engineering* entitled "Using Recurrent Neural Networks to Detect Changes in Autocorrelated Processes for Quality Monitoring"; *European Journal of Operational Research* entitled "Finding the Optimal CSP Inventory Level for Multi-Echelon System in Air Force using Random Effects Regression Model"; *IEEE Transactions on Reliability* entitled "Approximate Tolerance Limits and Prediction Limits for the Gamma Distribution"; *IIE Transactions on Quality and Reliability* entitled "A Distribution-Free Tabular CUSUM Chart for Autocorrelated Data; *International Journal of Production Research* entitled "Combining On-line Experiment and Process Control Methods for Changes in a Dynamic Model"; *Quality Engineering* entitled "Development of a Noise-Insensitive Bayesian Model with a Normal Conjugate Prior Distribution: Robust Design Perspectives"; *Military Operations Research* entitled "A Preliminary Analysis of Loitering Aircraft as a Capability Added to Anti-Ballistic Missile Systems"

Member: Editorial Board of *Quality Engineering*

Associate Editor: *Journal of Statistical Computation and Simulation*

Invited Participant: *INFORMS Young Researchers Roundtable*. *INFORMS* conference on OR/MS Business Practice

STAATS, RAYMOND W., Lt Col

Technical Paper Referee: *International Transactions in Operational Research*

THOMAS, MARLIN U.,

National Research Council, 2006, "The Role of Naval Forces in the Global War on Terror, The National Academies Press, Washington, DC (Committee)

National Research Council, 2006, "Defense Modeling, Simulation, and Analysis: Meeting the Challenge," The National Academies Press, Washington, DC (Reviewer)

5.6 DEPARTMENT OF SYSTEMS AND ENGINEERING MANAGEMENT

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5.6.1 MASTERS THESES

5.6.1.1 COST ANALYSIS (GCA)

ARMSTRONG, PATRICK D. *Developing an Aggregate Marginal Cost Per Flying Hour Model for the U.S. Air Force's F-15 Fighter Aircraft.* AFIT/GCA/ENV/06M-01, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: Air Force Cost Analysis Agency.

BERNAL, PHIL ANDREW L. *Forecasting Mental Health Care Cost for OIF and OEF Veterans.* AFIT/GCA/ENV/06J-01, Faculty Advisor: Maj Jeffrey Smith. Sponsor: N/A.

DAVIS, JUDY B. *The Impact of the Defense Industry Consolidation on the Aerospace Industry.* AFIT/GCA/ENV/06M-03, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

ELLIS, MARC D. *A Hedonic Approach to Estimating Software Cost Using Ordinary least Squares Regression and Nominal Attribute Variables.* AFIT/GCA/ENV/06M-04, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

HERALD, JENNY O. *Buying a Better Air Force.* AFIT/GCA/ENV/06M-05, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

SMIRNOFF, JAMES P. *The Impact of Economic Factors and Acquisition Reforms on the Cost of Defense Weapon Systems.* AFIT/GCA/ENV/06M-06, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

5.6.1.2 ENGINEERING MANAGEMENT (GEM)

BULSON, CHRISTOPHER D. *Using Value-Focused Thinking to Evaluate the Practicality of Porous Pavement Parking Areas on Air Force Installations.* AFIT/GEM/ENV/06M-01, Faculty Advisor: Lt Col Ellen England. Sponsor: AFCEE/ICM.

COOK, JASON J. *Estimating Required Contingency Funds for Construction Projects using Multiple Linear Regression.* AFIT/GEM/ENV/06M-02, Faculty Advisor: Lt Col Ellen England. Sponsor: N/A.

CROWLEY, RYAN A. *Development of an Evaluation Methodology for Hazardous Waste Training Program.* AFIT/GEM/ENV/06M-03, Faculty Advisor: Dr. Alfred Thal.
Sponsor: AFMC/MSEVQ.

GRAY, MICHAEL J. *The Effects of Ability Homophily on Individual Performance*. AFIT/GEM/ENV/06M-04, Faculty Advisor: Maj Kent Halverson. Sponsor: N/A.

HUGHES, BRIAN S. *Evaluating Alternatives for Drinking Water at Deployment Locations.* AFIT/GEM/ENV/06M-03, Faculty Advisor: Dr. Alfred Thal. Sponsor: AFIOH.

HUGHES, FRANK R. *The Effects of Major Organizational Policy on Employee Attitudes Toward Graduate Degrees.* AFIT/GEM/ENV/06M-05, Faculty Advisor: Dr. Alfred Thal. Sponsor: HQ AFCESA/CE

HUTCHINGS, MATTHEW B. *Indigenous Architecture for Expeditionary Installations.* AFIT/GEM/ENY/06M-06, Faculty Advisor: Lt Col Ellen England. Sponsor: N/A.

JOHNSON, MELISSA R. *An Analysis of USAF Aircraft Noise and Hedonic Property Values.* AFIT/GEM/ENV/06M-07, Faculty Advisor: Maj Sonia Leach. Sponsor: N/A.

JUN, YAN. *Evaluation of Chlorinated Solvents Removal Efficiency Among Three Wetland Plant Species: A Mesocom Study*. AFIT/GEM/ENV/06M-18, Faculty Advisor: Dr. Charles Bleckmann. Sponsor: N/A.

KELLNER, MOSTYN O. *A Decision Model for Choosing Among Photovoltaic Technologies to Generate Electricity at Grid-Connected Air Force Facilities: A Value-Focused Approach*. AFIT/GEM/ENV/06M-08, Faculty Advisor: Lt Col Ellen England. Sponsor: N/A.

KNOST, BENJAMIN R. *Formal and Informal Work Group Relationships with Performance: A Moderation Model using Social Network Analysis.* AFIT/GEM/ENV/06M-09, Faculty Advisor: Maj Kent Halverson. Sponsor: N/A.

MANTOVANI, KEVIN R. *Effects of Based Realignment and Closure (BRAC) on Real Estate Values*. AFIT/GEM/ENV/06M-10, Faculty Advisor: Dr. Michael Hicks. Sponsor: N/A.

MOORE, GARY J. *The Longitudinal Effect of Self-Monitoring and Locus of Control on Social Network Position in Friendship Networks.* AFIT/GEM/ENV/06M-11, Faculty Advisor: Maj Kent Halverson. Sponsor: N/A.

NELSON, RYAN E. *An Exploration of the Effects of Genetic Drift on the Endangered Red-Cockaded Woodpecker.* AFIT/GEM/ENV/06M-12, Faculty Advisor: Dr. Michael Shelley. Sponsor: N/A.

PHELPS, JENNIFER A. *Moderating Effects of Perceived Organizational Support on the Relationship Between Job Satisfaction and Turnover Intentions for Recently Retrained USAF Enlisted.* AFIT/GEM/ENV/06M-13, Faculty Advisor: Maj Sharon Heilmann. Sponsor: N/A.

PRATT, DAVID M. *Selecting Energy Efficient Building Envelope Retrofits to Existing Department of Defense Building Using Value Focused Thinking.* AFIT/GEM/ENV/06M-14, Faculty Advisor: Lt Col Ellen England. Sponsor: HQ AFCESA/CE

RIEKER, DANIEL J. *An Evaluation of How an Organizational Culture can Perpetuate a Formal Mentoring Relationship*. AFIT/GEM/ENV/06M-15, Faculty Advisor: Maj Sharon Heilmann. Sponsor: HQ AFMC/PK

WORKMAN, MARK D. *Earned Value Management: Implementation Plan for Air Force Civil Engineering.* AFIT/GEM/ENV/06M-17, Faculty Advisor: Dr. Alfred Thal. Sponsor: N/A.

5.6.1.3 ENVIRONMENTAL ENGINEERING AND SCIENCE (GES)

CAMERON, ERIC J. *Comparative Analysis of Airborne Exposure to Air Force Small Arms Range Instructors.* AFIT/GES/ENV/06M-01, Faculty Advisor: Dr. Ellen England. Sponsor: AFIOH/RSHI.

CLAUSON, MILTON J. *Analysis of Bacterial Population and Distribution in the Developing Strata of a Constructed Wetland Used for Chlorinated Ethene Bioremediation.* AFIT/GES/ENV/06M-02, Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: N/A.

KEMPISTY, DAVID M. *Comparative Analysis of Biosurveillance Methodologies.* AFIT/GES/ENV/06M-04, Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: National Defense University.

TUREK, NADJA F. *Investigation of Copper Contamination and Corrosion Scale Mineralogy in Aging Drink Water Distributions Systems.* AFIT/GES/ENV/06M-05, Faculty Advisor: Dr. Mark N. Goltz. Sponsor: AFMC/88 ABW/CE-2.

WAGNER, ANDREW J. *In Vitro Toxicity of Aluminum Nanoparticles in Rat Alveolar Macrophages.* AFIT/GES/ENV/06M-06, Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: AFRL/HEB.

WAGNER, DAVID E. *Modeling Study to Quantify the Benefits of Groundwater Contaminant Source Remediation.* AFIT/GES/ENV/06M-07, Faculty Advisor: Dr. Mark N. Goltz. Sponsor: AFCEE.

YOON, HYOUK. *Validations of Methods to Measure Mass Flux of Groundwater Contaminant.* AFIT/GES/ENV/06M-08, Faculty Advisor: Dr. Mark N. Goltz. Sponsor: AFCEE/TD.

5.6.1.4 INFORMATION ASSURANCE (GIA)

CRAWFORD, JAMES, Jr. *A Total Cost of Ownership Model for Software Protection Schemes.* AFIT/GIA/ENV/06-J01, Faculty Advisor: Dr. Michael Grimaila. Sponsor: AFRL/PA.

5.6.1.5 INORMATION RESOURCE MANAGEMENT (GIR)

BARNER, MARK E. *A Comparative Usability and End-User Satisfaction Analysis of Two Geographic Information System (GIS) Applications.* AFIT/GIR/ENV/06M-01, Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: IITA(USAFA).

BENTLY, RICHARD S. *Usability and Accessibility of Air Force Intranet Web Sites.* AFIT/GIR/ENV/06M-02, Faculty Advisor: Dr. Kevin L. Elder. Sponsor: N/A.

BOOKER, PATRICK L. *A Comparative Assessment of Knowledge Management Programs Across the United States Armed Services.* AFIT/GIR/ENV/06M-03, Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: N/A.

CORRIGAN, ROBERT M. *Contemplating a New Model for Aerospace Medical Technician Skills Sustainment Training.* AFIT/GIR/ENV/06M-04, Faculty Advisor: Maj Carolyn Macola. Sponsor: HQ USAF/SGCN.

HARP, DONNIE O. *Evaluating KM Journal Content: An Assessment of Trends (2000-2005).* AFIT/GIR/ENV/06M-06, Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: HQ AFMC/A5BK.

IVEY, KENNETH M. *High Performance individuals and How They Manage Their Personal Knowledge for Decision-Making: An Exploratory Study of US Air Force Leaders.* AFIT/GIR/ENV/06M-07, Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: N/A.

LAWSON, JOSEPH M. *A Comparative Analysis of Transmission Control Protocol Improvement Techniques Over Space Based Transmission Media.* AFIT/GIR/ENV/06M-08, Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: N/A.

SCHROEDER, NEIL J. *Using Prospect Theory to Investigate Decision-Making Bias Within an Information Security Context.* AFIT/GIR/ENV/05D-01, Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: U.S. Marine Force, Atlantic.

SHIN, YONGJOO. *Factors Impacting Key Management Effectiveness In Secured Wireless Networks.* AFIT/GIR/ENV/06M-09, Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: N/A.

TASSIKA, DAVIS M. *Corporate Entrepreneurship Assessment Instrument: Systematic Validation of a Measure.* AFIT/GIR/ENV/06M-05, Faculty Advisor: Maj Daniel Holt. Sponsor: N/A.

5.6.1.6 LOGISTICS MANAGEMENT (GLM)

BURKE, KENNETH W. *Building a Consensus Forecast for Crude Oil Prices.* AFIT/GLM/ENV/06-00, Faculty Advisor: Dr. Michael Hicks. Sponsor: N/A.

LANDRETH, DEX Y. *AFMC Civilian Retention: Forecasting Policy on the Future Civilian Workforce.* AFIT/GLM/ENV/06-01, Faculty Advisor: Maj Carolyn Macola. Sponsor: N/A.

ROMANO, DANIEL M. *An Asymmetrical Look at Air Force Human Capital Management: More Emphasis on Qualifications and Less on Rank.* AFIT/GLM/ENV/06-07, Faculty Advisor: Maj Carolyn Macola. Sponsor: AF/A1PFE.

WAGONER, DONALD J. *Predicting the Effects of Contingency Contracting on Local Economics.* AFIT/GLM/ENV/06-03, Faculty Advisor: Dr. Michael Hicks. Sponsor: ACC/USCENTAF/A4.

5.6.1.7 RESEARCH AND DEVELOPMENT MANAGEMENT (GRD)

CARBAJAL, JENNIFER M. *Influence of Organizational Culture on the Relationship between Psychological Contracts and Organizational Citizenship Behavior.* AFIT/GRD/ENV/06M-01, Faculty Advisor: Dr. Michael Rehg. Sponsor: N/A.

CARDEN, ROBERT D. *A Market Response to DoD Contact Delay.* AFIT/GRD/ENV/06M-02, Faculty Advisor; Maj Sonia E. Leach. Sponsor: N/A.

CODRINGTON, KEVIN W. *Cost as an Independent Variable: A Study of its Continued Use by Aeronautical Systems Center's Programs and their Contractors to set and Maintain Cost Objectives.* AFIT/GRD/ENV/06M-03, Faculty Advisor: Lt Col Ross McNutt. Sponsor: N/A.

ESPY, WALTER E. *Technology Transition: Guidance Versus Practice.* AFIT/GRD/ENV/06M-04, Faculty Advisor: Maj Sonia E. Leach. Sponsor: N/A.

HUTZEL, JOHN R. *A Graph Theoretic Analysis of the Effects of Organizational Structure on Employee Social Networks.* AFIT/GRD/ENV/06M-07, Faculty Advisor: Dr. Dennis Strouble. Sponsor: N/A.

MCCLAMMA, DYAN E. *Roadblocks to Software Modernization.* AFIT/GRD/ENV/06M-09, Faculty Advisor: Dr. Michael Rehg. Sponsor: N/A.

MIKULCIK, JOY D. *Challenges Facing Military Organizational Cultural Reform: A Study of the 2004 Air Force Material Command Reorganization.* AFIT/GRD/ENV/06M-10, Faculty Advisor: Maj Carolyn M. Macola. Sponsor: HQ AFMC/A8M.

SUAREZ, TONY A. *Acquisition Program Baselines: Theory & Practice.* AFIT/GRD/ENV/06M-11, Faculty Advisor: Maj Sonia E. Leach. Sponsor: N/A.

WARD, CHRISTOPHER J. *Factors Influencing Effectiveness of the Acquisition Career Field Initial Education Course.* AFIT/GRD/ENV/06M-13, Faculty Advisor: Dr. Michael Rehg. Sponsor: N/A.

5.6.1.8 SPACE SYSTEMS (GSS)

STRATTON, MITCHELL D. *Leadership in Groups: Social Networks and perceptions of Formal and Informal Leaders.* AFIT/GSS/ENV/06M-01, Faculty Advisor: Maj Kent C. Halverson. Sponsor: N/A.

5.6.2 FUNDED RESEARCH PROJECTS

GOLTZ, MARK N.,

"Reducing Ion Exchange Treatment Costs by Up to 40 Percent using Tailored Activated Carbon." Sponsor: SERDP. Funding: $25,000.

McNUTT, ROSS T., Lt Col

"Project Angel Fire." Sponsor: AFRL/SN. Funding: $86,540.

STROUBLE, DENNIS D.,

"Development of an Air Force Network Operations Cyber Warfare Damage Assessment Model." Sponsor: AFRL/HE. Funding: $25,000.

5.6.3 REFEREED JOURNALS

BADIRU, ADEDEJI B.,

Jeong, M. K.; O. A. Omitaomu; A. B. Badiru; W. Hines, "On-Line Prediction of Motor Shaft Misalignment Using Fourier-Transformed Power Spectrum Data and Support Vector Regression," *Journal of Manufacturing Science and Engineering*, Vol. 128, Issue 4, 2006, pp. 1019-1024.

BLECKMANN, CHARLES A.,

Rauch, M.E., H. W. Graef, S.M. Rozenzhak, S. E. Jones, C. A. Bleckmann, R. L. Kruger, R.R. Naik, M. O. Stone. 2006. Characterization of Microbial Contamination in United States Air Force Aviation Fuel Tanks. *Journal of Industrial Microbiology & Biotechnology*. 33:29-36.

Staudinger, T., E.C. England, and C. A. Bleckmann. 2006. A Comparative Analysis of Water Vulnerability Assessment Methodologies. *Journal of Infrastructure Systems*. 12: 96-106.

Bleckmann, C. A. 2006. Evolution and Creationism in ***Science*** – 1880–2000. *BioScience.* 56:151-158.

Zolock, R. A, G. Li, C. Bleckmann, L. Burggraf, and D.C. Fuller. 2006. Atomic Force Microscopy of *Bacillus* Spore Surface Morphology. *Micron*. 37:363-369.

Roberts, M., E. England, and C. Bleckmann. 2006. Cyclohexane Removal in a Dual Tube Membrane Bioreactor. *Bioremediation Journal.* 10:1-7.

Keen, B., E. England, T. Webb, S. Bartczak, and C. Bleckmann. 2006. The Relationship Between Environmental Management Strategies and Environmental Compliance at Marine Corps Installations. *Remediation.* 16:71-80.

GOLTZ, MARK N.,

Huang, J. and M.N. Goltz, "Analytical Solutions for Solute Transport in a Spherically Symmetric Divergent Flow Field," *Transport in Porous Media, 63*(2):305-321, 2006.

Goltz, M.N., R.K. Gandhi, S.M. Gorelick, G.D. Hopkins, L. Smith, B.H. Timmins, and P.L. McCarty, "Field Evaluation of *In Situ* Source Reduction of Trichloroethylene (TCE) in Groundwater Using Bio-enhanced In-Well Vapor Stripping," *Environmental Science and Technology, 39*:8963-8970, 2005.

Huang, J. and M.N. Goltz, "A Three-Dimensional Analytical Model to Simulate Groundwater Flow During Operation of Recirculating Wells," *Journal of Hydrology, 314*(1-4):67-77, 2005.

HICKS, MICHAEL J.,

Hicks, Michael J. "Transportation Infrastructure, Retail Clustering and Local Public Finance: Evidence from Wal-Mart's Expansion" *Regional Economic Development*, Vol 2(2) 2006.

Hicks, Michael J. "What do we know about Wal-Mart's local impact, and why is it important" *Economic Development Journal*, Vol 5(3) Summer 2006 pp 23-31.

HOLT, DANIEL T., Lt Col

Holt, D. T., Bleckmann, C. A., & Zitzmann, C. C. (2006). The graduate record examination and success in an engineering management program: A case study. *Engineering Management Journal, 18*(1), 10-16.

5.6.4 OTHER PUBLICATIONS

HICKS, MICHAEL J.,

Hicks, Michael J. "Transportation Infrastructure, Retail Clustering and Local Public Finance: Evidence from Wal-Mart's Expansion in the Mid-West" Transportation Research Board, National Academy of Sciences, Proceedings, Transportation and Economic Development, 2006.

Burton, Mark L. and Michael Hicks "Intermodal Terminal Locations, Economic Efficiency and Local Economic Impacts" Transportation Research Board, National Academy of Sciences, Proceedings, Transportation and Economic Development, 2006.

Hicks, Michael J." Does Wal-Mart Cause an Increase in Medicaid Expenditures? *Regional Economic Review*, Winter, 2005.

HOLT, DANIEL T., Lt Col

Holt, D. T. & Bartczak, S. E. (2007). Vignette on the quest for a measure of KM readiness (p. 37-43). In S. Foo, R. Sharma, & A. Chua (Authors), Chapter 2. Assessing the organization's readiness for knowledge management, *Knowledge Management Tools and Techniques—A learner's handbook.* Singapore: Prentice Hall.

THAL, ALFED E., Jr

*Jeoun, J., E. England, and A. Thal, "Geothermal Heating," *The Military Engineer*, 98(641):95-96, 2006.

5.6.5 SUBSTANTIAL CONSULTATIONS

WEST, CHRISTOPHER J.,

West, Christopher J. "Developing and Using Distributed Cognition Frameworks to Improve Wartime Control Center Performance in an Air National Guard Wing." Oct 05 - May 06. Old Dominion University, Norfolk, VA.

5.6.6 PRESENTATIONS

BADIRU, ADEDEJI B.,

Adedeji Badiru, **"**Industrial Outsourcing and Its Impacts in Enmeshing World Cultures," Symposium on International Education and Globalization, University of Tennessee, School of Information Sciences, Knoxville, TN, April 5, 2006.

Sirisha Nukala, Adedeji Badiru, "Demand Estimation Using Bayesian Methods for Exact and Censored Information," 2nd International Symposium on Management, Engineering and Informatics (MEI 2006), Orlando, Florida, July 16-19, 2006.

Badiru, Adedeji B., "TLSAMP is a Two-Way Street: The Student Benefits and the Advisor Benefits," Banquet Speech, Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP), August 24, 2006.

Badiru, Adedeji B., "Tools and Techniques for Industrial Project Management," Invited Lecture, Hanbat National University, Daejong, South Korea, May 29, 2006.

Badiru, Adedeji B., **"**Badiru s equation for Engineering Success; and the Discipline of Time; under the Constraint of Constant Change; with the requirement of a Socially responsible Future; when the expectation is for Paying it Forward as Independent Thinkers," Banquet Speech, Tau Beta Pi Banquet, The University of Tennessee, College of Engineering, April 20, 2006.

BLECKMANN, CHARLES A.,

Wagner, A., C. Bleckmann, E. England, K. Hess, J. Schlager, S. Hussain. 2006. "In Vitro Toxicity of Aluminum Nanoparticles in Rat Alveolar Macrophages." Society of Toxicology Conference, San Diego California.

GOLTZ, MARK N.,

Agrawal, A., M.N. Goltz, K. Pallavi, D.L. Phillips, M.D. Welling, and M.R. Stevens, "Application of Catalytic Reduction by Palladium and Formic Acid: Bench-scale Treatment of Groundwater Contaminated with Chlorinated Aliphatic Hydrocarbons," Nitroaromatic Compounds and Nitrate, 232nd ACS National Meeting, San Francisco, CA, 10-14 September 2006.

Goltz, M.N., J. Huang, D.E. Wagner, and J.L. Heiderscheidt, "Modeling the Benefits of Groundwater Contaminant Source Remediation," 2006 Western Pacific Geophysics Meeting, Beijing, China, 24-27 July 2006.

Goltz, M.N., J. Huang, P.B. Hatzinger, J. Diebold, Y.H. Farhan, and S. Neville, "Modeling a Field Evaluation of *In Situ* Bioremediation of Perchlorate-Contaminated Groundwater," 2006 Western Pacific Geophysics Meeting, Beijing, China, 24-27 July 2006.

Goltz, M.N., J. Huang, P.B. Hatzinger, J. Diebold, Y.H. Farhan, and S. Neville, "A Reactive Transport Model to Describe *In Situ* Perchlorate Bioremediation," Fifth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey California, 22-25 May 2006.

Yoon, H., M.E. Close, J. Huang, M.C. Brooks, A.L. Wood, J. Bright, and M.N. Goltz, "Validation of Mass Flux Measurement Methods in an Artificial Aquifer," Fifth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey California, 22-25 May 2006.

Diebold, J., P.B. Hatzinger, M.N. Goltz, J. Huang, S. Neville, and H.E. Nuttall, "Field Demonstration of Perchlorate Bioremediation using Horizontal Flow Treatment Wells," Fifth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey California, 22-25 May 2006.

Hatzinger, P.B., J. Diebold, M.N. Goltz, T.A. Krug, S. Neville, R. Cramer, and H.E. Nuttall, "Active *In Situ* Treatment Systems for Perchlorate in Groundwater," Partners in Environmental Technology Technical Symposium and Workshop, Washington DC, 29 November – 1 December 2005.

Hatzinger, P.B., J. Huang, M.N. Goltz, P. Chosa, J. Diebold, Y.H. Farhan, J.C. Parr, and S. Neville, "Perchlorate Bioremediation with Horizontal Flow Treatment Wells: Field Data and Modeling," Partners in Environmental Technology Technical Symposium and Workshop, Washington DC, 29 November – 1 December 2005.

Hatzinger, P.B., J. Huang, M.N. Goltz, P. Chosa, J. Diebold, Y.H. Farhan, J.C. Parr, and S. Neville, "Field Evaluation of *In Situ* Bioremediation of Perchlorate-Contaminated Groundwater: Modeling and Preliminary Results," The 1st International Conference on Challenges in Site Remediation: Proper Site Characterization, Technology Selection and Testing, and Performance Monitoring, Chicago, IL, 23-27 October 2005.

Huang, J., M.E. Close, S.J. Kim, J. Bright, and M.N. Goltz, "Use of an Innovative Mass Flux Measurement Method to Evaluate Groundwater Source Remediation Technology Performance," The 1st International Conference on Challenges in Site Remediation: Proper Site Characterization, Technology Selection and Testing, and Performance Monitoring, Chicago, IL, 23-27 October 2005.

HOLT, DANIEL T., Lt Col

Cole, M. S., Bernerth, J. B., & Holt, D. T. (2006). Linking injustice to emotional exhaustion and related levels of commitment and turnover intention. Paper presented at the annual meeting of the Academy of Management, Atlanta, GA, August 11 – 16.

Holt, D. T., Rehg, M. T., Lin, J. S., & Kulick, J. C. (2005). An application of the unfolding model to predict turnover decisions of military personnel. In *Proceedings of the Annual Meeting of the Southern Management Association*, Charleston, SC, November 9 – 12.

Holt, D. T., Bartczak, S. E., Leach, S. E., & Riddle, T. W. (2005). A test of the interaction between the process used to introduce change and the personality of organizational members. In *Proceedings of the Annual Meeting of the Southern Management Association*, Charleston, SC, November 9 - 12.

TURNER, JASON M.,

Turner, J. M., Laster, N. M., Welter, L., Hampel, A., & Suzaki, M. (November, 2005). Reaching In and Reaching Out: The Uses and Usefulness of Social Networks, Channels, and Selection Factors Influencing Social Network Communication. Top Paper, Human Communication Technology Division; National Communication Association Conference, Boston, MA.

WEST, CHRISTOPHER, Maj

West, C. The Dissertation Process for Engineering Management Students. The American Society for Engineering Management Annual Conference, Virginia Beach, VA., Oct 26, 2005.

5.6.7 BOOKS AND CHAPTERS IN BOOKS

BARTCZAK, SUMMER E., LT COL

*Holt, D. T. and S. E. Bartczak, "Vignette on the quest for a measure of knowledge management readiness," in Foo, S., Sharma, R., & Chua A. (Eds.), *Knowledge Management Tools and Techniques* (pp. 37-45). Singapore, Prentice-Hall. 2006.

HOLT, DANIEL T., Lt Col

*Holt, D. T. and S. E. Bartczak, "Vignette on the quest for a measure of knowledge management readiness," in Foo, S., Sharma, R., & Chua A. (Eds.), *Knowledge Management Tools and Techniques* (pp. 37-45). Singapore, Prentice-Hall. 2006.

5.6.8 OTHER SIGNIFICANT PROFESSIONAL ACTIVITIES

BADIRU, ADEDEJI B.,

Member, Program Committee, International Conference on Industrial Engineering and Systems Management (IESM 07), Beijing, China, May 30 – June 2, 2007)

Member, Advisory Board, African Regional Conference on Engineering Education (ARCEE 2006), South Africa, September 2006.

Research Proposal Reviewer, GEAR (Grants to Enhance and Advance Research), University of Houston, 2006.

HICKS, MICHAEL J.,

Independent Technical Reviewer: US Army Corps of Engineers, Independent Performance Evaluation Team Report on Hurricane Katrina (June 1, 2006)

West Virginia Special Reclamation Fund Advisory Council: Written presentation of tax extension to West Virginia Legislature (January, 2006)

SHELLEY, MICHAEL L.,

Technical Paper Referee: *Ecological Engineering*

Member: Advisory Board, Regional Water and Wastewater Research and Training Center

Postdoctoral Advisor within the National Research Council's Resident Research Associateships Program

THAL, ALFRED E., Jr

Reviewer: ASEE North Central Section Conference and *Journal of Environmental Management*

WEST, CHRISTOPHER J., Maj

Invited Reviewer, *Engineering Management Journal*

6. RESEARCH CENTER PUBLICATIONS AND FUNDING INFORMATION

*The contents of this section are duplicated data, grouped by center. The information is previously listed within each project's specific departement.

6.1 ADVANCED NAVIGATION TECHNOLOGY CENTER

Advanced Navigation Technology Center (ANT)
Director 255-3636 x4580
Executive Program Coordinator 255-3636 x4583
Laboratory Manager 255-3636 x4911
Homepage: http://www.afit.edu/en/ant

6.1.1 FUNDED RESEARCH PROJECTS

BLUE, PAUL A., Maj

"Planning, Guidance, and Control for Multiple UAV Cooperative Operations". Sponsor: AFRL/VA. Funding: $36,000. [ANT]

COBB, RICHARD A.,

"Evaluation of Innovative Space Missions". Sponsor: AFRL/VS. Funding: $40,000. [ANT]

"Evaluation of Innovative Space Missions". Sponsor: AFRL/VS. Funding: $35,000. [ANT]

GRAHAM, SCOTT R., Maj

"Effective Utilization of Hybrid Communication Networks for Adaptive Military and Commercial Infrastructure". Sponsor: AFOSR/MOA. Funding: $28,715. [ANT]

HOPKINSON, KENNETH M.,

"Effective Utilization of a Hybrid Communication Network". Sponsor: SAF/FMBMB-AFOY. Funding: $46,258. [ANT]

MULLINS, BARRY E.,

"Technical Support: Ground Mobile Objective Gateways". Sponsor: AFRL/MN. Funding: $49,000. [ANT]

PACHTER, MEIR,

"Optimization of MAV Operations". Sponsor: AFRL/VACA. Funding: $22,000. [ANT]

RAQUET, JOHN F.,

"Alternative Navigation Techniques". Sponsor: AFRL/MN. Funding: $50,000. [ANT]

"ANT Center and Laboratory Support per Appendix of the MOA between AFIT and AFRL". Sponsor: AFRL/SN. Funding: $58,000. [ANT]

"ANT Center and Laboratory Support per Appendix of the MOA between AFIT and AFRL". Sponsor: AFRL/SN. Funding: 81,956. [ANT]

ANT Center and Laboratory Support per Appendix of the MOA between AFIT and AFRL". Sponsor: AFRL/SN. Funding: $12,166. [ANT]

"CANIS-Related Navigation Research Projects for the ANT Laboratory". Sponsor: AFRL/SN. Funding: $93,000. [ANT]

"Geostationary Satellite Positioning using Two-Way Time Transfer and GPS". Sponsor: SAF/FMBMB-AFOY. Funding: $45,120. [ANT]

"Initial JPALS TSPI System Development". Sponsor: 746TS. Funding: $30,000. [ANT]

"Overcoming Geometric Deficiencies in Pseudolite Navigation Systems". Sponsor: AFOSR. [ANT] Funding: $98,591.

"Sub-Surface Navigation". Sponsor: AFRL/SN. Funding: $67,636. [ANT]

TEMPLE, MICHAEL A.,

"Detection, Characterization and Location of Spurious Receiver Emissions". Sponsor: SAF/FMBMB-AFOY. Funding: $43,865. [ANT]

"Technical Support: RF-EW Systems". Sponsor: AFRL/SN. Funding: $90,000. [ANT]

VASQUEZ, JUAN R., Lt Col

"ATR Fusion for Identity Experiment: Tracking, Classification, and Estimation". Sponsor: AFRL/SN. Funding: $40,000. [ANT]

6.1.2 REFEREED JOURNAL PUBLICATIONS

MAYBECK, PETER S.,

Williams, J. L. and Maybeck, P.S., "Cost-Function-Based Hypothesis Control Techniques for Multiple Hypothesis Tracking," *Mathematical and Computer Modeling,* Special Issue on Optimization and Control for Military Applications, Vol. 43, pp. 976-989, 2006. [ANT]

Ormsby, C. D., Raquet, J. F. and Maybeck, P. S., "A New Generalized Residual Multiple Model Adaptive Estimator of Parameters and States," *Mathematical and Computer Modeling,* Special Issue on Optimization and Control for Military Applications, Vol. 43, pp. 1092-1113, 2006. [ANT]

RAQUET, JOHN F.,

Veth, M., Raquet, J., Pachter, M., "Stochastic Constraints for Fast Image Correspondence Search with Uncertain Terrain Model," *IEEE Transactions on Aerospace and Electronics Systems*, Vol. 42, No. 3, (2006). [ANT]

Ormsby, C., Raquet, J. and Maybeck, P., "A New Generalized Residual Multiple Model Adaptive Estimator of Parameters and States," *Mathematical and Computer Modeling*, Vol 43, No. 9-10, pp. 1092-1113 (2006). [ANT]

6.1.3 OTHER PUBLICATIONS

BLUE, PAUL A., Maj

Jodeh, N., Blue, P., and Waldron, A., "Development of Small Unmanned Aerial Vehicle Research Platform: Modeling and Simulating with Flight Test Validation," AIAA Modeling and Simulation Technologies Conference and Exhibit, Keystone, Colorado, August 2006. AIAA - 2006-6261. [ANT]

PETERSON, GILBERT L.,

Wardell, D.C. and Peterson, G.L. "Fuzzy State Aggregation and Off-Policy Reinforcement Learning for Stochastic Environments,". *The Eight IASTED International Conference on Control and Applications,* (CA 2006), Montreal, Canada, May 24-26, 2006. [ANT]

RAQUET, JOHN F.,

*Amt, J. and Raquet, J., "Positioning for Range-Based Land Navigation Systems Using Surface Topography," *Proceedings of ION GNSS-2006*, Fort Worth, TX, Sep 2006. [ANT]

*Comstock, S. and Raquet, J., "Development of a Low-Latency, High Data Rate, Differential GPS Relative Positioning for UAV Formation Flight Control," *Proceedings of ION GNSS-2006*, Fort Worth, TX, Sep 2006. [ANT]

*Cook, K., Raquet, J. and Beckman, R., "Characterizing the Impact of Incorporating Two-Way Time Transfer Measurements on Network Differential GPS Position Solutions," *Proceedings of ION GNSS-2006*, Fort Worth, TX, Sep 2006. [ANT]

*Cook, K., Raquet, J. and Beckman, R., "Characterizing the Impact of Precision Time and Range Measurements on Network Position Solutions," *Proceedings of 2006 IEEE Aerospace Conference*, Big Sky, MT, Mar 2006. [ANT]

*McEllroy, J. and Raquet, J., "Use of a Software Radio to Evaluate Signals of Opportunity for Navigation," *Proceedings of ION GNSS-2006*, Fort Worth, TX, Sep 2006. [ANT]

*Ross, S., Jacques, D., Pachter, M. and Raquet, J., "A Close Formation Flight Test for Automated Air Refueling," *Proceedings of ION GNSS-2006*, Fort Worth, TX, Sep 2006. [ANT]

*Shockley, J. and Raquet, J., "Estimation and Mitigation of Unmodeled Errors for a Pseudolite Based Reference System," *Proceedings of ION GNSS-2006*, Fort Worth, TX, Sep 2006. [ANT]
*Somerville, E. and Raquet, J., "Self-Differential GPS—What Are the Limits?," *Proceedings of 2006 National Technical Meeting of the Institute of Navigation*, Monterey, CA, Jan 2006.

*Spinelli, C. and Raquet, J., "Development and Testing of a High-Rate Air-to-Air Relative Navigation System for UAV Refueling," *Proceedings of ION GNSS-2006*, Fort Worth, TX, Sep 2006. [ANT]

*Veth, M. and Raquet, J., "Fusion of Low-Cost Imaging and Inertial Sensors for Navigation," *Proceedings of ION GNSS-2006*, Fort Worth, TX, Sep 2006. [ANT]

*Veth, M. and Raquet, J., "Two-Dimensional Stochastic Projections for Tight Integration of Optical and Inertial Sensors for Navigation," *Proceedings of 2006 National Technical Meeting of the Institute of Navigation*, Monterey, CA, Jan 2006. [ANT]

6.1.4 PRESENTATIONS

MAYBECK, PETER S.,

Kozak, M. C. and Maybeck, P. S "Enhanced Multiple Model Tracker Based on Gaussian Mixture Reduction for Maneuvering Targets in Clutter," *Proceedings of the SPIE, SPIE Annual International Defense and Security Symposium*, Orlando, Florida, April 2006. [ANT]

RAQUET, JOHN F.,

Amt, J., Shockley J. and Raquet, J., "Ground Navigation Using a Pseudolite-Only System," presented at *2006 Joint Navigation Conference*, Las Vegas, NV., May 2006. [ANT]

Bouska, T. and Raquet, J., "Field Test Results from a Synchronized Pseudolite Based Navigation Reference System," presented at *2006 Joint Navigation Conference*, Las Vegas, NV, May 2006. [ANT]

Miller, M., Campbell, J., Raquet, J., Peterson, B., Hanson, R., "CANIS – Cooperative Autonomous Vehicles for Intelligent Sensing," presented at *2006 Joint Navigation Conference*, Las Vegas, NV, May 2006. [ANT]

Raquet, J., McEllroy, J., Fisher, K. and Eggert, R., "Navigation Using Signals of Opportunity," presented at *2006 Joint Navigation Conference*, Las Vegas, NV., May 2006. [ANT]

Veth, M. and Raquet, J., "Aircraft Testing of Vision/Inertial Fusion Navigation System," presented at *2006 Joint Navigation Conference*, Las Vegas, NV, May 2006. [ANT]

Veth, M. and Raquet, J., "Indoor Navigation Using Fusion of Optical and Inertial Sensors," presented at *2006 Joint Navigation Conference*, Las Vegas, NV, May 2006. [ANT]

6.2 CENTER FOR DIRECTED ENERGY

Center for Directed Energy (CDE)
Director 255-3636 x7294
Program Coordinator 255-3636 x4706
Homepage: http://www.afit.edu/de/

6.2.1 FUNDED RESEARCH PROJECTS

ALLEY, THOMAS G., Lt Col

"Nonlinear Optical Effects in Fibers and Their Applications to High Energy Lasers". Sponsor: AFRL/DE. Funding: $90,000. [CDE]

BOHN, MATTHEW J., Lt Col

"Optical Diagnostics for the Production of Carbon Nanotubes from PLD". Sponsor: AFOSR. Funding: $30,580. [CDE]

CUSUMANO, SALVATORE J.,

"Delivered Irradiance Assessment Tool (DIAT)". Sponsor: U.S. ARMY/Directed Energy Test and Evaluation Capability (DETEC). Funding: $191,000. [CDE]

"Robust Characterization of DEW Weapons: HELEEOS Intel". Sponsor: NASIC. Funding: $75,000. [CDE]

"Subject Matter Expert (SME) Consultation to Air Force Flight Test Center -Airborne Laser". Sponsor: 412 TW/DRP. Funding: $30,000. [CDE]

FIORINO, STEVEN T., Lt Col

"HELEEOS-based Laser Propagation Module for AFRL Wargaming Simulation Software". Sponsor: AFRL/VA. Funding: $30,000. [CDE]

"Probabilistic HELEEOS Atmospheric Information for AFRL Weather Impact". Sponsor: AFRL/VA. Funding: $31,198. [CDE]

MARCINIAK, MICHAEL A.,

"Infrared Counter-Countermeasure Research". Sponsor: AFRL/ML. Funding: $25,000. [CDE]

"Infrared Optical Signature Measurement Research". Sponsor: AFRL/SN. Funding: $6,090. [CDE]

"Infrared Optical Signature Measurement Research". Sponsor: AFRL/SN. Funding: $30,000. [CDE]

NIDAY, THOMAS A., Capt

"Modeling and Simulation of the Dynamics and Applications of Light Filaments". Sponsor: AFOSR/MOA. Funding: $11,391. [CDE]

PERRAM, GLEN P.,

"Closed Cycle Chemical Laser: ElectriCOIL". Sponsor: AFOSR/NL. Funding: $81,1058. [CDE]

"High Energy Laser Weapons: Modeling and Simulation. Phase III Apply M&S Capabilities to Weapon and Battlefield Effectiveness". Sponsor: High Energy Laser Joint Technology Office. Funding: $460,000. [CDE]

"Lineshape and Collisional Dynamics of Hyperfine and Magnetically-Split Cs (2P1/2,3/2) for the Optically-Pumped Cesium Laser". Sponsor: AFRL/DE. Funding: $30,000. [CDE]

"Near Infrared Radiometric Signatures of Flashless Gunpowder". Sponsor: Navy. Funding: $35,000. [CDE]

"Support for Establishment of an IPA Appointment to Lead Gas Phase Laser Research Effort Collaboration between AFIT and University, Government and Industry Partners". Sponsor: AFRL/DE. Funding: $95,472. [CDE]

"Technical and Administrative Support for the AFOSR Center of Excellence in High Power Gas Phase Electric and Hybrid Lasers". Sponsor: AFRL/DE. Funding: $120,000. [CDE]

6.2.2 FUNDED EDUCATIONAL PROJECTS

CUSUMANO, SALVATORE J.,

"2006 Directed Energy Summer Scholars Program, A Companion Program of the AFIT E2S2I Summer Internship Program". Sponsor: Directed Energy Professional Society Educational Committee. Funding: $30,000. [CDE]

PERRAM, GLEN P.,

"High Energy Laser Weapons Systems Short Course." Sponsor: DEPS Educational Committee. Funding: $17,500. [CDE]

6.2.3 REFEREED JOUNRAL PUBLICATIONS

FIORINO, STEVEN T., Lt Col

Fiorino, S.T., R.J. Bartell, G.P. Perram, D.W. Bunch, L.E. Gravley, C.A. Rice, Z.P. Manning, and M.J. Krizo, 2006: The HELEEOS Atmospheric Effects Package: A Probabilistic Method for Evaluating Uncertainty in Low-Altitude High Energy Laser Effectiveness. *J. Dir Energy*, Vol 1, No. 4, pp. 347-359. [CDE]

HENGEHOLD, ROBERT L.,

*Ryu, M.Y., Y.K. Yeo, M.A. Marciniak, T.W. Zens, E.A. Moore, R.L. Hengehold, and T.D. Steiner, "Electrical and optical characterization studies of lower dose Si-implanted $Al_xGa_{1-x}N$," *Journal of Electronic Materials*, Vol. 35, pp. 647-653 (2006). [CDE]

*Ryu, M.Y., Y.K. Yeo, M.A. Marciniak, and R.L. Hengehold "Electrical and optical activation studies of high dose Si-implanted $Al_{0.18}Ga_{0.82}N$," *Solid State Communication*, Vol. 139, pp. 284-288 (2006). [CDE]

MARCINIAK, MICHAEL A.,

*M.-Y. Ryu, Y.K. Yeo, T.W. Zens, M.A. Marciniak, R.L. Hengehold and T.D. Steiner, "Electrical characterization of Si-ion implanted $Al_xGa_{1-x}N$ annealed at lower temperatures," Phys. Stat. Sol. (a) 203(7), 1650 (2006). [CDE]

*M.-Y. Ryu, Y.K. Yeo, M.A. Marciniak, T.W. Zens, E.A. Moore, R.L. Hengehold, and T.D. Steiner, "Electrical and optical characterization studies of lower dose Si-implanted $Al_xGa_{1-x}N$," Journal of Electronic Materials, 35(4), 647 (2006). [CDE]

YEO, YUNG KEE,

*Kucko, J.F., J.C. Petrosky, J.R. Reid, and Y.K. Yeo "Non-charge related mechanism affecting capacitive MEMS switch lifetime," *IEEE Microwave and Wireless Components Letters*, Vol. 16, pp. 140-142 (2006).

*Raley, J.A., Y.K. Yeo, R.L. Hengehold, M.Y. Ryu, and T. D. Steiner, "Room temperature ferromagnetic properties of transition metal implanted $Al_{0.35}Ga_{0.65}N$," *Journal of Alloys and Compounds*, Vol. 423, pp. 184-187 (2006).

*Ryu, M.Y., Y.K. Yeo, M.A. Marciniak, T.W. Zens, E.A. Moore, R.L. Hengehold, and T.D. Steiner, "Electrical and optical characterization studies of lower dose Si-implanted $Al_xGa_{1-x}N$," *Journal of Electronic Materials*, Vol. 35, pp. 647-653 (2006). [CDE]

*Ryu, M.Y., Y.K. Yeo, T.W. Zens, M.A. Marciniak, R.L. Hengehold, and T.D. Steiner, "Electrical characterization of Si-ion implanted $Al_xGa_{1-x}N$ annealed at lower temperatures," *Physical Status Solid (a)*, Vol 203, pp. 1650-1653 (2006). [CDE]

*Ryu, M.Y., Y.K. Yeo, M.A. Marciniak, and R.L. Hengehold "Electrical and optical activation studies of high dose Si-implanted $Al_{0.18}Ga_{0.82}N$," *Solid State Communication*, Vol. 139, pp. 284-288 (2006). [CDE]

6.2.4 OTHER PUBLICATIONS

ALLEY, THOMAS G., Lt Col

Terry, N.B., T.G. Alley, and W.B. Roh, "Brightness conversion using a Raman fiber laser based on a multimode fiber," Advanced Solid State Photonics 2006 Topical Meeting Conference Program and Technical Digest, MB-15 (2006). [CDE]

*Grime, B.W., W.B. Roh, and T.G. Alley, "Beam phasing multiple fiber amplifiers using a fiber phase conjugate mirror," Fiber Lasers III: Technology, Systems, and Applications, A.J.W. Brown, J. Nilsson, D.J. Harter, A. Tunnermann eds., SPIE Proc. 6102 (2006). [CDE]

BUNKER, DAVID J.,

*Tuttle, Ronald F., Adam Talkington and David J. Bunker, "Using Visual Interactive Site Analysis Code (VISAC) Predictives for Post-Attack Signature Database Development to Aid in the Functional Defeat of a Foreign Nuclear Power Plant," MASINT Signatures Technology Symposium, Chantilly, VA 12-13 Sep 2005. [CMSR]

FIORINO, STEVEN T., Lt Col

Fiorino, S.T., Bartell, R.J., G.P. Perram, M.J. Krizo, L.E. Gravley, T.P. Huster, J.P. Cheney, and K.B. Le, "Expected Worldwide Laser Performance in Spectrally Diverse Near Earth Scenarios in the Presence of Common Atmospheric Obscurants" Proceedings of the Military Sensing Symposium, Monterey, CA, September 2006. [CDE]

Belton, S.L., S.T. Fiorino, R.J. Bartell, and M.J. Krizo, "The Simulation of Off-Axis Laser Propagation Using HELEEOS" Proceedings of the Military Sensing Symposium, Monterey, CA, September 2006. [CDE]

MARCINIAK, MICHAEL A.,

J.D. Norman, M.A. Marciniak and M.B. Haeri, "Optical blooming effects in indium-antimonide detector arrays under high-flux conditions," *Proceedings of the 2006 Meeting of the Military Sensing Symposium Specialty Group on Infrared Countermeasures*, Paper # E03, Monterey, CA, 25-27 April 2006. [CDE]

ROH, WON B.,

*Terry, N.B., T.G. Alley, and W.B. Roh, "Brightness conversion using a Raman fiber laser based on a multimode fiber," Advanced Solid State Photonics 2006 Topical Meeting Conference Program and Technical Digest, MB-15 (2006). [CDE]

Grime, B.W., W.B. Roh, and T.G. Alley, "Beam phasing multiple fiber amplifiers using a fiber phase conjugate mirror," Fiber Lasers III: Technology, Systems, and Applications, A.J.W. Brown, J. Nilsson, D.J. Harter, A. Tunnermann eds., SPIE Proc. 6102 (2006). [CDE]

6.2.5 SUBSTANTIAL CONSULTATIONS

CUSUAMNO, SALVATORE J.,

Perram, Glen, Bartell, Rick, Krizo, Mathew, Fiorino, Steven, Cusumano, Salvatore J., "High energy Laser Weapons: Modeling and Simulation", Joint Technology Office for High energy Lasers (JTO HEL). [CDE]

Cusumano, Salvatore J., "Subject Matter Expert (SME) Consultations" to Air Force Flight Test Center, member of the Safety Review Board for the Airborne Laser. [CDE]

Bartell, Richard, Krizo, Mathew, Fiorino, Steven, Cusumano, Salvatore J., "Robust Characterization of DEW Weapons: HELEEOSIntel". [CDE]

Cusumano, Salvatore J., Marciniak, Michael A., Bailey, Bill, and McCrae, Jack, "Delivered Irradiance assessment Tool (DIAT)," Directed Energy Test and Evaluation Capability, Jul-Sep 2006. [CDE]

MARCINIAK. MICHAEL A.,

*Cusumano, Sal, Marciniak, Michael A., Bailey, Wm. F., and McCrae, Jack, "Delivered Irradiance Assessment Tool (DIAT)," Directed Energy Test and Evaluation Capability, Jul-Sep 2006. [CDE]

Marciniak, Michael A., "Time-resolved luminescence spectroscopy to determine carrier dynamics in mid-infrared semiconductor quantum well optoelectronic devices for Air Force applications," Air Force Office of Scientific Research, Oct 2005-Sep 2006. [CDE]

6.2.6 PRESENTATIONS

ALLEY, THOMAS G., Lt Col.

Terry, N.B., T.G. Alley, and W.B. Roh, "Brightness conversion using a Raman fiber laser based on a multimode fiber," Advanced Solid State Photonics 2006 topical meeting, 30 Jan 2006, Lake Tahoe, NV. [CDE]

*Grime, B.W., W.B. Roh, and T.G. Alley, "Beam phasing multiple fiber amplifiers using a fiber phase conjugate mirror," Fiber Lasers III: Technology, Systems, and Applications (Photonics West LASE Symposium), 25 Jan 2006, San Jose, CA. [CDE]

CUSUMANO, SALVATORE J.,

Salvatore J. Cusumano, Richard J. Bartell, Marken J Houle, Glen P. Perram, and Robert L. Hengehold, "Directed Energy Education at AFIT—A Pyramid Model for Educating DE Professionals" Directed Energy Professional Society Eighth Annual Symposium & Education Workshop, Lihue, HI, November 2005. [CDE]

Cusumano, Salvatore J., Houle, Marken, "AFRL-AFIT Collaboration on the SMART Program", AFRL/SN, Nov 2006. [CDE]

Cusumano, Salvatore J., Houle, Marken, "AFIT's Center for Directed Energy", NRO, Nov 2006. [CDE]

Cusumano, Salvatore J., Houle, Marken, "AFRL-AFIT Collaboration on the SMART Program", AFRL/VA, Jan 2006. [CDE]

Cusumano, Salvatore J., Houle, Marken, "AFIT", ABL SPO, KAFB, NM, Jan 2006. [CDE]

Cusumano, Salvatore J., Houle, Marken, "AFIT and the Center for Directed Energy", AFRL/DE, KAFB, NM, Feb 2006. [CDE]

Cusumano, Salvatore J., Houle, Marken, "AFIT and the SMART Program", 452nd FTW, EAFB, CA, Feb 2006. [CDE]

Cusumano, Salvatore J., Houle, Marken, "How the Center can work within the Intel Community", DIA, Mar2006. [CDE]

Cusumano, Salvatore J., Houle, Marken, "The Center for Directed Energy", ACC, Langley AFB, VA, Apr 2006. [CDE]

FIORINO, STEVEN T., Lt Col

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, L.E. Gravley, T.P. Huster, J.P. Cheney, K.B. Le and S. Hammel, "Comparison of HELEEOS Systems Model Results to Analysis of a Maritime HEL Propagation Study Utilizing Several Independent Models and Databases" Directed Energy Professional Society 2006 Systems Symposium, Monterey, CA, 22 March 2006. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, L.E. Gravley, T.P. Huster, J.P. Cheney, and K.B. Le, "Expected Performance of High Energy Lasers Operating Under Geographically and Spectrally Diverse Conditions for Oblique Near Earth Scenarios in the Presence of Common Atmospheric Obscurants" Directed Energy Professional Society 2006 Systems Symposium, Monterey, CA, 22 March 2006. [CDE]

Gravley, L.E., S.T. Fiorino, R.J. Bartell, G.P. Perram, M.J. Krizo, and K.B. Le, "Comparison of Climatological Optical Turbulence Profiles to Standard, Statistical and Numerical Models Using HELEEOS" Directed Energy Professional Society 2006 Systems Symposium, Monterey, CA, 22 March 2006. [CDE]

*Bartell, R.J., G.P. Perram, S.T. Fiorino, M.J. Krizo, E. Magee, M. Whiteley, and A. Ngwele, "Evaluation of Phase-Only Adaptive Optics Efficacy Over a Diverse Range of Operating Regimes-Part II" Directed Energy Professional Society 2006 Systems Symposium, Monterey, CA, 23 March 2006. [CDE]

Bartell, R.J., S.T. Fiorino, G.P. Perram, M.J. Krizo, T.P. Huster, J.P. Cheney, E. Magee, M. Whiteley, and A. Ngwele, "Comparison of Peak Irradiance and Power-in-the-Bucket Predictions Among Several Scaling Law Models and Wave Optics Codes Over Diverse Low Altitude Operating Regimes" Directed Energy Professional Society 2006 Annual Symposium, Albuquerque, NM, 2 November 2006. [CDE]

Fiorino, S.T., R.J. Bartell, J.D. Eckel, M.J. Krizo, and S.J. Cusumano, "Application and Impacts of Ground-to-Space Cloud Free Line of Sight Probabilities to Air-to-Ground High Energy Laser Engagement Scenarios" Directed Energy Professional Society 2006 Annual Symposium, Albuquerque, NM, 2 November 2006. [CDE]

HENGEHOLD, ROBERT L.,

*Ryu, M.Y., Y.K. Yeo, and R.L. Hengehold, "Electrical and Optical Activation Studies of Si-implanted $Al_xGa_{1-x}N$," the 4th International Conference on Advanced Materials and Devices (ICAMD), Jeju Island, Korea, 5-7 December 2005. [CDE]

*Salvatore J. Cusumano, Richard J. Bartell, Marken J Houle, Glen P. Perram, and Robert L. Hengehold, "Directed Energy Education at AFIT—A Pyramid Model for Educating DE Professionals" Directed Energy Professional Society Eighth Annual Symposium & Education Workshop, Lihue, HI, November 2005. [CDE]

MARCINIAK, MICHAEL A.,

J.D. Norman, M.A. Marciniak and M.B. Haeri, "Optical blooming effects in indium-antimonide detector arrays under high-flux conditions," 2006 Meeting of the Military Sensing Symposium Specialty Group on Infrared Countermeasures, Monterey, CA, 25-27 April 2006. [CDE]

PERRAM, GLEN P.,

*Richard Bartell, Steven Fiorino, Matthew Krizo, Glen Perram, Todd Huster, Justin Cheney, Eric Magee, Matthew Whiteley, and Amy Ngwele, "Comparison of Peak Irradiance and Power in the Bucket Predictions Among Several Scaling Law Models and Wave Optics Codes Over Diverse Low Altitude Operating Regimes", Ninth Annual Directed Energy Symposium, Albuquerque, NM, Nov 2006. [CDE]

Katherine Essenhigh and Glen Perram, "Planar Laser Induced Fluorescence for Supersonic Flow Visualization" Ninth Annual Directed Energy Symposium, Albuquerque, NM, Nov 2006. [CDE]

Kevin C. Gross, Glen P. Perram, Ronald F. Tuttle, "Using fireball signatures and phenomenology to distinguish high explosives" 2nd Annual Advanced Signatures Technology Symposium, Air Force Institute of Technology, Wright Patterson Air Force Base, Ohio 7-9 Nov 2006. [CDE]

Skip William, Jeffrey Gallagher and Glen Perram, "Collisional broadening coefficients of singlet ($a^1\Delta_g$) oxygen with helium", 2006 59th Annual Gaseous Electronics Conference, Columbus, OH, Oct 2006. [CDE]

C. Phelps, C. Druffner, R. R. Biggers, G. P. Perram, "Optical analysis of the emissive plume structure during pulsed laser deposition of YBCO", SPIE Great Lakes Photonics Symposium, Dayton, Ohio 12-16 June 2006. [CDE]

G. P. Perram, G. A. Pitz, K. Essenhigh, "Flow visualization for high-power chemical lasers", SPIE Great Lakes Photonics Symposium, Dayton, Ohio 12-16 June 2006. [CDE]

Steven T. Fiorino, Richard J. Bartell, Glen P. Perram, Matthew J. Krizo, Liesebet E. Gravley, Todd P. Huster, Justin P. Cheney, and Kelly B. Le, "Expected Worldwide Laser Performance in Spectrally Diverse Near Earth Scenarios in the Presence of Common Atmospheric Obscurant" MSS Conference. [CDE]

Steven T. Fiorino, Richard J. Bartell, Glen P. Perram, Matthew J. Krizo, Liesebet E. Gravely, Todd P. Huster, Justin P. Cheney, and Kelly B. Le, "Expected Performance of High Energy Lasers Operating Under Geographically and Spectrally Diverse Conditions for Oblique Near Earth Scenarios in the Presence of Common Low Altitude Atmospheric Obscurants", Directed Energy Professional Society 1st Annual Systems Symposium, Monterey, CA, March 2006. [CDE]

Salvatore J. Cusumano, Richard J. Bartell, Marken J Houle, Glen P. Perram, and Robert L. Hengehold, "Directed Energy Education at AFIT—A Pyramid Model for Educating DE Professionals" Directed Energy Professional Society Eighth Annual Symposium & Education Workshop, Lihue, HI, November 2005. [CDE]

Carl J. Druffner, Patrick D. Kee, Glen P. Perram, R.R. Biggers "Developing Optical Diagnostic Sensors for Monitoring Pulsed Laser Deposition of Long Lengths of $YBa_2Cu_3O_{7-x}$ Wires" 1st Dayton Engineering Sciences Symposium, Dayton, Ohio, October 2005. [CDE]

Richard J. Bartell, Steven T. Fiorino, Glen P. Perram, Scott N. Long, Matthew J. Krizo, Todd P. Huster, Justin P. Cheney, and Liesebet E. Gravley, "Methodology for Estimation of Variance in High Energy Laser System Performance Due to Spatial and Temporal Climatological Effects from 0.355 μm – 14 μm", Directed Energy Professional Society 8th Annual Symposium, Lihue, HI, November 2005. [CDE]

Matthew A. Lange, Greg A. Pitz and Glen P. Perram, "The effect of residence time on the production of singlet oxygen in a microwave discharge", Directed Energy Professional Society 8th Annual Symposium, Lihue, HI, November 2005. [CDE]

Kevin C. Gross, Glen P. Perram, and Ronald F. Tuttle, "High Explosive Fireball Phenomenology for Event Classification", Directed Energy Professional Society 8th Annual Symposium, Lihue, HI, November 2005. [CDE]

Michael R. Hawks and Glen P. Perram, "Monocular Passive Ranging (MPR) for tracking boost-phase missiles based on $O_2(X^3\Sigma_g^- \rightarrow b^1\Sigma_g^+)$ atmospheric absorption", Directed Energy Professional Society 8th Annual Symposium, Lihue, HI, November 2005. [CDE]

TUTTLE, RONALD F.,

*Kevin C. Gross, Glen P. Perram, Ronald F. Tuttle, "Using fireball signatures and phenomenology to distinguish high explosives" 2nd Annual Advanced Signatures Technology Symposium, Air Force Institute of Technology, Wright Patterson Air Force Base, Ohio 7-9 Nov 2006. [CDE]

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6.3 CENTER FOR INFORMATION SECURITY EDUCATION & RESEARCH

Center for Information Security Education and Research (CISER)
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Executive Program Coordinator 255-3636 x6024
Homepage: http://www.afit.edu/ciser/

6.3.1 FUNDED RESEARCH PROJECTS

MILLS, ROBERT F.,

"Insider Threat Mitigation". Sponsor: NSA. Funding: $10,000. [CISER]

"Technical Support, RF Sensing Applications". Sponsor: AFRL/SN. Funding: $15,000. [CISER]

"Technical Support, RF Sensing Applications". Sponsor: AFRL/SN. Funding: $13,000. [CISER]

MULLINS, BARRY E.,

"Air Force Communication Systems Modeling". Sponsor: AFCA. Funding: $64,000. [CISER]

"Investigation of Wireless Sensor Network Research to Department of Defense Applications". Sponsor: AFRL/IF. Funding: $43,000. [CISER]

"Secure Communication in a Mobile Wireless Network Environment". Sponsor: NIETP. Funding: $144,281. [CISER]

RAINES, RICHARD A.,

"Development of a Federal Cyber Force at the Air Force Institute of Technology". Sponsor: NSF. Funding: $90,609. [CISER]

"Collaborative Project -- AFIT and Sinclair Community College: Building Core IA Educational Capacity". Sponsor: NSF. Funding: $69,121. [CISER]

"Tuition and Resource Support for the AFIT Center for Information Security Education and Research (CISER)". Sponsor: NSA. Funding: $342,682. [CISER]

"Development of a Federal Cyber Force at the Air Force Institute of Technology". Sponsor: NSF. Funding: $268,426. [CISER]

6.3.2 FUNDED EDUCATIONAL PROJECTS

MULLINS, BARRY E.,

"Secure Communication in a Mobile Wireless Network Environment". Sponsor: NIETP. Funding: $144,281. [CISER]

RAINES, RICHARD A.,

"Anti-Tamper Software Protection Initiative Education, Outreach, and Research (Scope and Budget Revision)". Sponsor: AFRL/SN. Funding: $257,188. [CISER]

6.3.3 REFEREED JOURNAL PUBLICATIONS

BALDWIN, RUSTY O.,

*Peterson, B. S., Baldwin, R. O. and Kharoufeh, J. P., "Bluetooth Inquiry Time Characterization and Selection," *IEEE Transactions on Mobile Computing*, September 2006, Vol. 5, No. 9, pp. 1173-1187. [CISER]

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MILLS, ROBERT F.,

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*Baldwin, R.O., Peterson, B.S. and Mills, R.F., "Using Playing Cards to Estimate Interference in Frequency Hopping Spread Spectrum Radio Networks," *Journal of Systems and Software*, (in press), 21 pages. [CISER]

*Roberts, M.L., Temple, M.A., Mills, R.F. and Raines, R.A., "Evolution of Cellular Communication Technology toward 4G Realization: Coding, Modulation, and Multiple Access Techniques," *IEEE Communications Surveys and Tutorials*, Vol. 7, No. 4, Mar 2006, pp. 2-23. [CISER]

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RAINES, RICHARD A.,

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BALDWIN, RUSTY O.,

*Roelke, G. R., Baldwin, R. O., Mullins, B. E. and Kim, Y C., "A Fault Tolerant Content Addressable Memory Cache Architecture for Nanotechnologies," *2nd IEEE International Workshop on Fault-Tolerant Nanoscale Architectures*, Boston, MA, June 2006, pg. 17-24. [CISER]

*Chaboya, D. J., Raines, R. A., Baldwin, R. O. and Mullins, B. E., "Reliably Determining the Outcome of Computer Network Attacks," in *18th Forum of Incident Response and Security Teams (FIRST) Conference*, Baltimore, MD, June 2006, pp. 1-10. [CISER]

*Fraser, N. A., Raines, R. A. and Baldwin, R. O., "Mitigating Distributed Denial of Service Attacks in an Anonymous Routing Environment: Client Puzzles and Tor," in *Proceedings of the International Conference on Information Warfare and Security*, Princess Anne, MD, March 2006. [CISER]

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*Morris, K. M., Mullins, B. E., Pack, D. J., York, G. W. P. and Baldwin, R. O., "Impact of Limited Communications on a Cooperative Search Algorithm for Multiple UAVs,", accepted for publication in the *IEEE International Conference On Networking, Sensing and Control* (ICNSC 2006), Ft. Lauderdale, FL, April 2006, Awarded Best Student Paper. [CISER]

*Peterson, B. S., Baldwin, R. O. and Raines, R. A., "Bluetooth Discovery Time with Multiple Inquirers," in *The Proceedings of the 39th Hawaii International Conference on System Sciences (HICSS-39)*, Kauai, Hawaii, January 2006, 232a.1-232a.5. [CISER]

*Chaboya, D. J., Raines, R. A., Baldwin, R. O. and Mullins, B. E., "Social Engineering the Network Security Analyst: An Advanced Study in Intrusion Detection System Evasion," *2005 IEEE Military Communications Conference*, Atlantic City, NJ, October 2005, CS13.1.1-CS13.1.8. [CISER]

*Stanley, J., Mills, R. F., Raines, R. A. and Baldwin, R. O., "Correlating Network Services and Events with Operational Mission Impact," *2005 IEEE Military Communications Conference*, Atlantic City, NJ, October 2005, U402.3.1-U402.3.8 [CISER]

HOPKINSON, KENNETH M.,

*Raines, R., Fraser, N., Baldwin, R., Hopkinson, K., "Mitigating Distributed Denial of Service Attacks in an Anonymous Routing Environment," *Proceedings of the 2006 International Conference on i-Warfare and Security*, Princess Anne, MD, 15-16 Mar 2006. [CISER]

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*Valentine, J.R., Mills, R.F., Grimaila, M.R., Elder, K.L., "Application of the Strategic Alignment Model and Information Technology Governance Concepts to Support Network Centric Warfare," 11th International Command and Control Research and Technology Symposium, Cambridge, UK, September 2006. [CISER]

*Roberts, M.L., Temple, M.A., Oxley, M.E., Mills, R.F. and Raines, R.A., "A Spectrally Modulated, Spectrally Encoded Analytic Framework for Carrier Interferometry Signals," *International Wireless Communication & Mobile Computing Conference* (IWCMC 06), Vancouver, BC, Canada, July 2006, pp 1009-1014. [CISER]

*Dalton, G.C., Mills, R.F., Colombi, J.M. and Raines, R.A., "Analyzing Attack Trees using Generalized Stochastic Petri Nets," *7th IEEE Workshop on Information Assurance*, U.S. Military Academy, West Point, NY, 21-23 June 2006, pp 116-123. [CISER]

*Okolica, J.S., Peterson, G.L. and Mills, R.F., "Using Author Topic to Detect Insider Threats from Email Traffic", IEEE International Conference on Intelligence and Security Informatics (ISI-2006), San Diego, CA, May 22-24, 2006. [CISER]

*Butts, J.W., Mills, R.F. and Peterson, G.L., "A Multidisciplinary Approach to Mitigating the Insider Threat," *International Conference on Information Warfare and Security (ICIW),* Princess Anne, MD, March 2006. [CISER]

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*Stanley, J.E., Mills, R.F., Raines, R.A. and Baldwin, R.O., "Correlating Network Services with Operational Mission Impact," *2005 Military Communications Conference*, Atlantic City, New Jersey, Oct 2005, 7 pages. [CISER]

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*Ives, J. L., Baldwin, R. O., Mullins, B. E. and Raines, R. A., "Performance Evaluation of a Field Programmable Gate Array Reconfiguration System," *2006 Military and Aerospace Programmable Logic Devices (MAPLD) International Conference*, Washington DC, September 2006. [CISER]

Augeri, C. J., Morris, K. M. and Mullins, B. E., "JOCOSIM: Integrating a Java, OPNET, and C-Based Co-Simulation for Analyzing Unmanned Aerial Vehicle Swarms", *OPNETWORK 2006*, August 2006, pp. 1-8. [CISER]

*Chaboya, D. J., Raines, R. A., Baldwin, R. O. and Mullins, B. E., "Reliably Determining The Outcome of Computer Network Attacks," *The 18th Forum of Incident Response and Security Teams (FIRST) Conference*, Baltimore, MD, June 2006, pp. 1-10. [CISER]

*Roelke, G., Baldwin, R. O., Mullins, B. E. and Kim, Y C., "A Fault Tolerant Content Addressable Memory Cache Architecture for Nanotechnologies" *2nd IEEE International Workshop on Fault-Tolerant Nanoscale Architectures*, Boston, MA, June 2006, pp. 17-24. [CISER]

*Morris, K. M., Mullins, B. E., Pack, D. J., York, G. W. P. and Baldwin, R. O., "Impact of Limited Communications on a Cooperative Search Algorithm for Multiple UAVs", *IEEE International Conference On Networking, Sensing and Control* (ICNSC 2006), Ft. Lauderdale, FL, April 2006, pp. 572-577, Best Student Paper Award. [CISER]

*Dube, T. E., Edge, K. S., Raines, R. A., Baldwin, R. O., Mullins, B. E. and Reuter, C., "Metamorphism as a Software Protection," *The International Conference on Information Warfare and Security*, Eastern Shores, MD, March 2006, pp. 57-66. [CISER]

*Chaboya, D. J., Raines, R. A., Baldwin, R. O. and Mullins, B. E., "Social Engineering the Network Security Analyst: An Advanced Study in Intrusion Detection System Evasion," *IEEE Military Communications Conference* (MILCOM 2005), Atlantic City, NJ, October 2005, pp. 1-8. [CISER]

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*Agaian, S., Peterson, G.L., Bauer, K.W. and Rodriguez, B., 2006, "Multiple masks-based pixel comparison steganalysis method for mobile imaging," *In Mobile Multimedia/Image Processing for Military and Security Applications of the SPIE Symposium on Defense and Security*, Orlando, FL, 17-21 April 2006. [CISER]

Agaian, S.S., Rodriguez, B.M. and Peterson, G.L., 2006, "New Steganalysis Technique for the Digital Media Forensics Examiner," *IEEE Region 5 Technical, Professional, and Student Conference,* San Antonio, TX, April 7. [CISER]

Butts, J.W., Mills, R.F. and Peterson, G.L., 2006, "A Multidiscipline Approach to Mitigating the Insider Threat," *International Conference on Information Warfare and Security (ICIW)*, Princess Anne, MD, March 2006. [CISER]

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RAINES, RICHARD A.,

*Jones, C. O., Mills, R. F. and Raines, R. A., "Removing Security through Obscurity from Software Watermarking," *IAnewsletter*, Information Assurance Technical Analysis Center, Vol 9, No. 2, Fall 2006, pp. 14-17. [CISER]

*Dalton, G. C., Mills, R. F., Colombi, J. M. and Raines, R. A., "Analyzing Attack Trees using Generalized Stochastic Petri Nets," *Proceedings of the 7th IEEE Workshop on Information Assurance*, U. S. Military Academy, West Point NY, 21-23 June 2006, pp. 116-123. [CISER]

*Edge, K.S., Lamont, G. B. and Raines, R. A., "A Retrovirus Inspired Algorithm for Virus Detection," *GECCO 2006*, July 2006. [CISER]

*Chaboya, D. J., Raines, R. A., Baldwin, R. O. and Mullins, B. E., "Reliably Determining The Outcome of Computer Network Attacks," *The 18th Forum of Incident Response and Security Teams (FIRST) Conference*, Baltimore, MD, June 2006, pp. 1-10. [CISER]

*Dube, T. E., *Edge, K. S., Raines, R. A., Baldwin, R. O., Mullins, B. E. and Reuter, C., "Metamorphism as a Software Protection," accepted for presentation and publication in *The International Conference on Information Warfare and Security*, Eastern Shores, MD, March 2006, pp. 57-66. [CISER]

*Fraser, N. A., Raines, R. A., Baldwin, R. O. and Hopkinson, K. M., "Mitigating Distributed Denial of Service Attacks in an Anonymous Routing Environment: Client Puzzles and Tor," accepted for presentation and publication in *The International Conference on Information Warfare and Security*, Eastern Shores, MD, March 2006, pp. 85-94. [CISER]

*Edge, K. S., *Dube, T. E., Raines, R. A., Baldwin, R. O. and Reuter, C., "A Taxonomy of Protections in Computer Viruses and Their Application to Software Protection," accepted for presentation and publication in *The International Conference on Information Warfare and Security*, Eastern Shores, MD, March 2006, pp. 67-76. [CISER]

*Hubenko, V. P., Raines, R. A., Temple, M. A., Mills, R. F. and Saeger, M. D., "Adaptation, Modeling, and Analysis of Protocol Independent Multicasting-Dense Mode in a Low Earth Orbit Satellite Network," *2006 IEEE Aerospace Conference*, presented March 2006. [CISER]

*Peterson, B. S., Baldwin, R. O. and Raines, R. A., "Bluetooth Discovery Time with Multiple Inquirers," Accepted for publication in *Hawaii International Conference on System Sciences-HICSS-39*, Kauai, Hawaii, January 2006, pp 232a-1 – 232a-5. [CISER]

Raines, R. A., "IA Education and Research at AFIT," *IAnewsletter*, Information Assurance Technical Analysis Center, Vol 8, No. 2, December 2005, pp. 18-20. [CISER]

*Chaboya, D. J., Raines, R. A., Baldwin, R. O. and Mullins, B. E., "Social Engineering the Network Security Analyst: An Advanced Study in Intrusion Detection System Evasion," *IEEE Military Communications Conference* (MILCOM 2005), Atlantic City, NJ, October, 2005, CLASSIFIED SESSION, pp. CS13.1.1-CS13.1.8. [CISER]

*Stanley, J. E., Mills, R. F., Raines, R. A. and Baldwin, R. O., "Correlating Network Services with Operational Mission Impact," *IEEE Military Communications Conference* (MILCOM 2005), Atlantic City, NJ, October 2005, pp. U402.3.1-U402.3.8. [CISER]

Roberts, M.L., Temple, M.A., Oxley, M.E., Mills, R.F., Raines, R.A., "A General Analytic Framework for Spectrally Modulated, Spectrally Encoded Signals," *2006 International Conference on Waveform Diversity & Design*, Presented: Jan 06. [CISER]

*Hubenko, V.P., Raines, R.A., Temple, M.A., Mills, R.F. and Saeger, M.D., "Adaptation, Modeling, and Analysis of Protocol Independent Multicasting-Dense Mode in a Low Earth Orbit Satellite Network," *2006 IEEE Aerospace Conference*, Presented Mar 2006. [CISER]

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TEMPLE, MICHAEL A.,

Roberts, M.L., Temple, M.A., Raines, R.A. and Clabaugh, D.J., Time Hopping Biorthogonal Pulse Position Modulation in Modified Saleh-Valenzuela UWB Channels," *2006 International Conference on UWB (ICUWB 2006)*, Presented: Sep 06. [CISER]

Roberts, M.L., Temple, M.A., Oxley, M.E., Mills, R.F. and Raines, R.A., "A Spectrally Modulated, Spectrally Encoded Analytic Framework for Carrier Interferometry Signals," *2006 Int'l Wireless Comm and Mobile Computing Conference*, Vancouver, Canada, Presented: Jul 06. [CISER]

*Hubenko, V.P., Raines, R.A., Temple, M.A., Mills, R.F. and Saeger, M.D., "Adaptation, Modeling, and Analysis of Protocol Independent Multicasting-Dense Mode in a Low Earth Orbit Satellite Network," *2006 IEEE Aerospace Conference*, Presented Mar 2006. [CISER]

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6.3.5 SUBSTANTIAL COUNSULTATIONS

MULLINS, BARRY E.,

Mullins, Barry E., "AF Communication Systems Modeling," Air Force Communication Agency, Apr-Sep 2006. [CISER]

Mullins, Barry E., "Network Embedded Systems Technology (NEST) program," Defense Advanced Research Projects Agency (DARPA), Jan-Sep 2006. [CISER]

Mullins, Barry E., "Secure Communication in a Mobile Wireless Network Environment," National Security Agency, Feb-Sep 2006. [CISER]

6.3.6 PRESENTATIONS

MILLS, ROBERT F.,

Mills, Robert F., "C2 Modeling: Modeling Network Centric Operations and Command and Control for Cyberspace," AFIT/AFRL Lecture series, Rome NY Sep 2006. [CISER]

Mills, Robert F., "Multidisciplinary Approach to Mitigating the Insider Threat," NSA Workshop on Computer Network Defense, May 2006. [CISER]

Mills, Robert F., "Automated Support for Detecting Computer Network Outages," NSA Workshop on Computer Network Defense, May 2006. [CISER]

PETERSON, GILBERT L.,

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RAINES, RICHARD A.,

Raines, Richard A., "Cyberspace and Developing a Cyberspace Workforce," presented to NRO (MG Latiff), Wright Patterson AFB, OH, February 2006. [CISER]

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Raines, Richard A., "Cyberspace and Developing a Cyberspace Workforce," presented to *Department of Homeland Security, Office of the Chief Information Officer* (Mr. Dave Nettleton), January 2006. [CISER]

Raines, Richard A., "The Center for Information Security Education and Research," presented to *Congressman David Hobson's Chief of Staff* (Mr. Wayne Struble) WPAFB, OH., December 2005. [CISER]

Raines, Richard A., "The Center for Information Security Education and Research," presented to *The Air University Board of Visitors,* WPAFB, OH., November 2005. [CISER]

6.4 CENTER FOR MASINT STUDIES AND RESEARCH

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6.4.1 FUNDED EDUCATIONAL PROJECTS

TUTTLE, RONALD F.,

"Advanced Geospatial Intelligence Education". Sponsor: National Geospatial-Intelligence Agency. Funding: $375,000. [CMSR]

"Advanced Geospatial Intelligence Education". Sponsor: National Geospatial-Intelligence Agency. Funding: $375,000. [CMSR]

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6.4.2 OTHER PUBLICATIONS

MARCINIAK, MICHAEL A.,

J.M. Lemery, M.A. Marciniak, N.J. Abel and S.R. Davidson, "Analysis of electro-optic sensor detection via optically augmented retro-reflections," *Proceedings of the 2006 Meeting of the Military Sensing Symposium Specialty Group on Infrared Countermeasures*, Paper # P04, Monterey, CA, 25-27 April 2006. [CMSR]

S.A. Uzpen, M.A. Marciniak, J.W. Burks and J.P. Costantino, "Weathering effects on aircraft paint with regard to infrared signature," *Proceedings of the 2006 Meeting of the Military Sensing Symposium Specialty Group on Infrared Countermeasures*, Paper # B05, Monterey, CA, 25-27 April 2006. [CMSR]

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TUTTLE, RONALD F.,

Graham, Kathrine M., Ronald F. Tuttle and Jay B. Jordan, "Taming a Wicked Problem: Applying Signatures and Signature Phenomenologies to Reveal Foreign Denial and Deception Programs," Proceedings of the Advanced Signatures Technology Symposium, Air Force Institute of Technology, Wright-Patterson AFB, OH 7-9 Nov 2006. [CMSR]

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Graham, Kathrine M., Ronald F. Tuttle and Jay B. Jordan, "Advanced Cognitive Methodologies for Applying Signature Phenomenologies to Counter Foreign Denial and Deception Programs," Proceedings of the MASINT Signatures Technology Symposium, Chantilly, VA 12-13 Sep 2005. [CMSR]

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6.4.3 SUBSTANTIAL CONSULTATIONS

BUNKER, DAVID J.,

Bunker, David J., "Development and Application of MASINT Techniques for Underground Facilities," National Air and Space Intelligence Center, Oct 2005 – Jan 2006. [CMSR]

Bunker, David J., “Synthesis and Evaluation of Advanced Geospatial Intelligence Signatures,” National Air and Space Intelligence Center, Oct 2005 – Sep 2006. [CMSR]

Bunker, David J., “MASINT/AGI Classified Journal,” National Geospatial-Intelligence Agency and the National MASINT Committee, Oct 2005 – Sep 2006. [CMSR]

MARCINIAK. MICHAEL A.,

Marciniak, Michael A., “Infrared optical signature measurement research,” Signature Division, Sensors Directorate, Air Force Research Laboratory (AFRL/SNS), Oct 2005-Sep 2006. [CMSR]

Marciniak, Michael A., “Infrared counter-countermeasure research,” Sensor Materials Branch, Survivability and Sensor Materials Division, Materials and Manufacturing Directorate, AFRL (AFRL/MLPJ), Oct 2005-Sep 2006. [CMSR]

Marciniak, Michael A., “Radiometric analysis of daytime satellite detection,” Electro-Optical (EO) Countermeasures Technology Branch, Electro-Optical Sensor Technology Division, AFRL/SN (AFRL/SNJW), Oct 2005-Mar 2006. [CMSR]

MATHEWS, KIRK A.,

Mathews, K. A., “Detection of Low-Level Radioactive Materials and Nuclear Fuel Cycle Issues”, Air Force Technical Applications Command, Patrick AFB, FL, Jul-Aug 2006. [CMSR]

TUTTLE, RONALD F.,

Tuttle, Ronald F., “Educating the NGA Workshop on Advanced Geospatial Intelligence Disciplines,” National Geospatial-Intelligence Agency, Oct 2005–Jun 2006. [CMSR]

6.4.4 PRESENTATIONS

BAILEY, WILLIAM F.,

Josyula, E. and Wm. F. Bailey, "State-Specific Vibrational Relaxation and Thermal Dissociation in Nonequilibrium Hypersonic Flows," Presented in 25th Int'l Rarefied Gas Dynamics Conf., July 2006, St. Petersburg, Russia. [CMSR]

BUNKER, DAVID J.,

*Tuttle, Ronald F., Adam Talkington and David J. Bunker, “Using Visual Interactive Site Analysis Code (VISAC) Predictives for Post-Attack Signature Database Development to Aid in the Functional Defeat of a Foreign Nuclear Power Plant,” MASINT Signatures Technology Symposium, Chantilly, VA 12-13 Sep 2005. [CMSR]

FIORINO, STEVEN T., Lt Col

Belton, S.L., S.T. Fiorino, R.J. Bartell, and M.J. Krizo, "The Simulation of Off-Axis Laser Propagation Using HELEEOS" Directed Energy Professional Society 2006 Systems Symposium, Monterey, CA, 22 March 2006. [CMSR]

MARCINIAK, MICHAEL A.,

S.A. Uzpen, M.A. Marciniak, J.W. Burks and J.P. Costantino, "A measurement-base examination of optical signature changes due to weathering effects on aircraft paint," 29th Exhaust Plume Technology Subcommittee (EPTS) and 11th SPIRITS User Group, Littleton, CO, 19-23 June 2006. [CMSR]

J.M. Lemery, M.A. Marciniak, N.J. Abel and S.R. Davidson, "Analysis of electro-optic sensor detection via optically augmented retro-reflections," 2006 Meeting of the Military Sensing Symposium Specialty Group on Infrared Countermeasures, Monterey, CA, 25-27 April 2006. [CMSR]

S.A. Uzpen, M.A. Marciniak, J.W. Burks and J.P. Costantino, "Weathering effects on aircraft paint with regard to infrared signature," 2006 Meeting of the Military Sensing Symposium Specialty Group on Infrared Countermeasures, Monterey, CA, 25-27 April 2006. [CMSR]

J. Bortle and M.A. Marciniak, "A measurement- and prediction-based validation of the AFIT Large Commercial Aircraft Infrared (LCAIR) signature tool," Electro-Optic/Infrared Calibration and Characterization Workshop, Logan, UT, 7-9 March 2006. [CMSR]

PERRAM, GLEN P.,

Kevin. C. Gross and Glen P. Perram, "Developing a Phenomenological Model of Infrared Emissions from Detonation Fireballs for Explosive Identification" 8th Workshop on Infrared Remote Sensing Applications, Mont Sainte-Anne, Quebec, Canada, Oct 2006. [CMSR]

B. J. Steward, T. Warren, K. Gross, G. P. Perram, "Multiband imagery of detonation fireballs for event classification", SPIE Great Lakes Photonics Symposium, Dayton, Ohio, 12-16 June 2006. [CMSR]

R. L. Bostick, G. P. Perram, "Hyperspectral mid-infrared imagery of transient emissive events using chromotomography", SPIE Great Lakes Photonics Symposium, Dayton, Ohio 12-16 June 2006. [CMSR]

Randall Bostick and Glen Perram, "Hyperspectral Imaging using Chromotomography: A Fieldable Visible Instrument for Transient Events" 2006 International Symposium on Spectral Sensing Research, Bar Harbor, Maine 29 May – 2 June 2006. [CMSR]

Glen Perram, Kevin Gross, Bryan Steward, Trevor Warren, and Ronald Tuttle, "The Phenomenology Of High Explosive Fireballs from Fielded Spectroscopic And Imaging Sensors for Event Classification", 2006 International Symposium on Spectral Sensing Research, Bar Harbor, Maine 29 May – 2 June 2006. [CMSR]

Kevin C. Gross, Glen P. Perram, Ronald F. Tuttle, "Developing a Phenomenological Model of Infrared Emissions from Detonation Fireballs for Explosives Identification" 9th International HITRAN Conference, Columbus, OH, 26-28 June 2006. [CMSR]

TUTTLE, RONALD F.,

*Glen Perram, Kevin Gross, Bryan Steward, Trevor Warren, and Ronald Tuttle, "The Phenomenology Of High Explosive Fireballs from Fielded Spectroscopic And Imaging Sensors for Event Classification", 2006 International Symposium on Spectral Sensing Research, Bar Harbor, Maine 29 May – 2 June 2006. [CMSR]

Tuttle, Ronald F., Adam Talkington and David J. Bunker, "Using Visual Interactive Site Analysis Code (VISAC) Predictives for Post-Attack Signature Database Development to Aid in the Functional Defeat of a Foreign Nuclear Power Plant," MASINT Signatures Technology Symposium, Chantilly, VA 12-13 Sep 2005. [CMSR]

Tuttle, Ronald F., "MASINT Certificate Program for the Intelligence Community Professional," MASINT Training and Education Workshop, Defense Intelligence Analysis Center, Bolling AFB, MD 28-30 Mar 2006. [CMSR]

6.5 CENTER FOR OPERATIONAL ANALYSIS

Center for Operational Analysis (COA)
Director 255-6565 x4326
Projects Director 255-6565 x4251
Homepage: http://www.afit.edu/coa/

6.5.1 FUNDED RESEARCH PROJECTS

BAUER, KENNETH W., Jr.

"Classification and Fusion Based Methods for the Analysis of Hyperspectral and Polarimetric Imagery". Sponsor: SAF/FMBMB-AFOY. Funding: $210,000. [COA]

"Sensor Fusion for Automatic Target Recognition". Sponsor: ESC. Funding: 23,000. [COA]

"Sensor Fusion for Automatic Target Recognition". Sponsor: AFOSR. Funding: 50,000. [COA]

DENHARD, DAVID R., Lt Col

AFIT Support to AFRL Effects-Based Operations Program". Sponsor: AFRL/IF Funding: $22,310.00 [COA]

MILLER, JOHN O.,

"AFIT Faculty Support to Command and Control Research". Sponsor: AFRL/IF. Funding: $19,000. [COA]

"Air Force Standard Analysis Toolkit (AFSAT) Support". Sponsor: AF/XC. Funding: $12,000. [COA]

"Air Force Standard Analysis Toolkit (AFSAT) Support". Sponsor: AF/XC. Funding: $53,000. [COA]

MOORE, JAMES T.,

"Adaptive Filter using Wavelets with Genetic Algorithms". Sponsor: AFOSR. Funding: $50,000. [COA]

"Application of Metaheuritstics to Air Force Problems". Sponsor: AFOSR. Funding: $50,000. [COA]

6.5.2 REFEREED JOURNAL PUBLICATIONS

BAUER, KENNETH W., Jr,

*C. Brian Bassham, Kenneth W. Bauer, Jr., and J. O. Miller , "Automatic Target Recognition System Evaluation Using Decision Analysis Techniques", Military Operations Research, Vol 11, No. 1, 2006. [COA]

Hoffman D. L., Bauer K. W., S. P. Chambal, "Using Neural Networks for Estimating Cruise Missile Reliability", Military Operations Research, Vol 10, No 3, 2005, pp. 5-24. [COA]

Laine, T.I. and K.W. Bauer, "Input Feature Selection for Automatic Target Recognition of Temporal Data," Military Operations Research, Vol 10, No 2, 2005. [COA]

JOHNSON, ALAN W.,

Mongold, M. and A. Johnson, 2006, "Pure Pallet Impact on the Effectiveness and Efficiency of the Defense Transportation System" *Journal of Transportation Management* 17(1): 18-30. [COA]

Guarnieri, J., Johnson A., and Swartz, S., 2006, "A Maintenance Resources Capacity Estimator", *Journal of the Operational Research Society* 57(10): 1188-1196. [COA]

KINNEY, GARY W. Jr., Maj,

*G W Kinney Jr., R R Hill, and J T Moore, "Devising a quick-running heuristic for an unmanned aerial vehicle (UAV) routing system" *Journal of the Operational Research Society* 56(7) 776-786. (2005). [COA]

MILLER, JOHN O.,

*Bassham, C. Brian, Bauer, K.W. Jr, and Miller, J.O. "Automatic Target Recognition System Evaluation Using Decision Analysis Techniques," *Military Operations Research*, Vol 11, No.1, pp. 49-66, 2006. [COA]

MOORE, JAMES T.,

Baltacioğlu, E, J. T. Moore, and R. R. Hill, "The Distributor's Three-Dimensional Pallet-Packing Problem: A Human Intelligence-Based Heuristic Approach", *International Journal of Operational Research*, 1 (3): 249-266 (2006). [COA]

Harwig, J. M., J. W. Barnes, and J. T. Moore, "An Adaptive Tabu Search Approach for 2–Dimensional Orthogonal Packing Problems", *Military Operations Research* 11 (2): 5-26 (2006). [COA]

6.5.3 OTHER PUBLICATIONS

JOHNSON, ALAN W.,

Johnson, A., Jacobs, T., Stiegelmeier, A., Pope, J., and M. Martindale, 2006, "Simulating Reusable Military Launch Vehicle Regeneration Activities between Flights," *Proceedings of the American Institute of Aeronautics and Astronautics Space 2006 Symposium, San Jose CA,* AIAA-2006-7230. [COA]

*Stiegelmeier, A., J. Pope, A. Johnson, S. Melouk, S. Brady, and S. Griffis, 2006, Discrete Event Simulation Modeling for Air Force Reusable Military Launch Vehicle Evaluation, *Proceedings of the April, 2006 Western Decision Sciences Institute Conference, Waikoloa HI,* 391-395. [COA]

*Brigantic, R., Doctor, P., Campbell, J., Johnson, A., and P. Coomber, 2006, "An Assessment of Hickam Air Force Base's Capability to Support Strategic Airlift Throughput when Operating under an Avian Flu Pandemic," *Proceedings of the April, 2006 Western Decision Sciences Institute Conference, Waikoloa HI*, 418-422. [COA]

KINNEY, GARY W. Jr., Maj

Gary Kinney, J.W. Barnes, and Bruce Colletti, "Reactive Tabu Search Algorithm with Variable Clustering for the Unicost Set Covering Problem", *forthcoming in International Journal of Operational Research.* [COA]

6.5.4 SUBSTANTIAL CONSULTATIONS

ANDERSON, BRADLEY E., Lt Col

Anderson, Bradley E., Worked with HQ AFMC/A8S on prior research work for Non-Optimized (NOP) items in Materiel Readiness Support Packages (MRSP's). Per their 2005 annual report, currently used NOP formulas were corrected and recommendations were made for future policies (May 2006). [COA]

Anderson, Bradley E., Merged decision theory and different models of decision making in developing an Analytic Network Process (ANP) model of the strategic mobility decision model that helps TRANSCOM coose between sealift and airlift for global mobility in the selection of air or sealift options (Mar 2006). [COA]

MILLER, J. O.,

Miller, J.O., Led working group to develop Use Case for HPC in constructive combat modeling, HPC Forces Modeling Simulation IPT, Orlando, FL. Mar 9-10. [COA]

Miller, J.O., AFIT representative on DoD M&S Workforce Development Team/Focus Group, DoD M&S Conference, Baltimore, MD, May 1-5. [COA]

6.5.5 PRESENTATIONS

ANDERSON, BRADLEY E., Lt Col

Anderson, Bradley E., "A Simple Heuristic for Sequence Dependent Setup Scheduling on Multiple Machines with an Earliness and Tardiness Objective," accepted for publication in the proceedings and presented at the National Decision Sciences Institute (DSI) Annual Meeting in San Francisco, CA Nov, 2005. [COA]

Anderson, Bradley E., "The Operational Impact of Mobility Readiness Spares Package Configuration During Operation Iraqi Freedom" accepted for publication in the proceedings and presented at the Western Decision Sciences Institute (WDSI) Annual Meeting in Waikoloa, HI Apr, 2006. [COA]

BAUER, KENNETH W., Jr

Smetek, Timothy and Bauer, Kenneth, "Improved Hyperspectral Target Detection using Optimization and Applied Statistical Methods," 74 MORS Symposium, United States Air Force Academy, Colorado Springs, Colorado, 13-15 June 2006. [COA]

Albrecht, Timothy and Bauer, Kenneth, "Synthetic Aperture Radar Automatic Target Recognition with Out-of-Library Targets and Pose Estimation," 74 MORS Symposium, United States Air Force Academy, Colorado Springs, Colorado, 13-15 June 2006. [COA]

*F. M. Mindrup, K. Bauer, M. Oxley, "An Investigation of the Effects of Correlation and Autocorrelation on Classifier Fusion with Non-Declarations", *Proceedings of the Artificial Neural Networks in Engineering Conference (ANNIE 2004)*, Editors: C. Dagli, D. Enke, A. Buczak, M. Embrechts, O. Ersoy, paper TP2.1A, St. Louis, MO, 6-9 November 2005. [COA]

JOHNSON, ALAN W.,

Captain George Cole and A. Johnson, "Logistics Composite Model Variance Reduction", INFORMS National Meeting, November 4-8 2006, Pittsburgh. [COA]

CMSGT Terry D. Moore and A.W. Johnson, "Examining the Impact of Quality Assurance Manning Practices in Air Force Aircraft Maintenance Units." 17th Annual Conference of POMS, 28 April-1 May 2006, Boston. [COA]

Major Margaret M. Romero, A.W. Johnson, and R.T. Brigantic, "Rough-Cut Analysis Method for Tanker Aircraft Employment Operations", 74th MORS Symposium, 13-15 June 2006, Air Force Academy.

Major Margaret M. Romero and A.W. Johnson, "An Algebra of Tanker Aircraft Employment." INFORMS National Meeting, November 17-19 2005, San Francisco. [COA]

KINNEY, GARY W., Jr, Maj

Gary Kinney, J.W. Barnes, and Bruce Colletti, "Reactive Tabu Search Algorithm with Variable Clustering for the Unicost Set Covering Problem" Institute for Operations Research and Management Science Annual Conference in Pittsburgh. [COA]

MILLER, JOHN O.,

Honabarger, Jason and Miller, J.O., "Modeling Network Centric Warfare (NCW) with SEAS," MORS Symposium, USAF Academy, CO, 13-15 Jun 2006. [COA]

Honabarger, Jason and Miller, J.O., "Modeling Network Centric Warfare (NCW) with SEAS," SEAS User's Group Meeting, San Pedro, CA, 27 April 2006. [COA]

Rucker, Jeffrey and Miller, J.O., "Using Agent-Based Modeling to Search for Elusive Hiding Targets," SEAS User's Group Meeting, San Pedro, CA, 27 April 2006. [COA]

Miller, J.O., "High Performance Computing (HPC) in Combat Modeling at AFIT," HPC Forces Modeling Simulation IMT, Orlando, FL, 9 -10 Mar 2006. [COA]

*Bauer, Kenneth W. Jr., Oxley, M., and Miller, J.O. "Sensor Fusion for Automatic Target Recognition," AFOSR Mathematics and Discrete Optimization Program Review, Fort Walton Beach, FL, 11-12 Mar 2006. [COA]

MOORE, JAMES T.,

*Weinstein, Amanda L., Raymond W. Staats, and James T. Moore, "A Value-Focused Examination of Air Force Tanker Fleet Mixes and CONOPS". Military Operations Research Society Symposium, Colorado Springs, CO, 13-15 June 2006. [COA]

Moore, James T., "Application of Metaheuristics to Air Force Problems", AFOSR Optimization and Discrete Mathematics Program Review, Fort Walton Beach, FL, 22-24 May 2006. [COA]

Burks, Robert E. and James T. Moore, "An Advanced Tabu Search Heuristic for Solving the Theater Distribution Problem", Institute for Operations Research and the Management Sciences (INFORMS) Conference, San Francisco, CA, 13-16 November 2005. [COA]

Havlicek, Jeffrey D. and James T. Moore, "Theater Aerial Refueling Vehicle Routing Models", Institute for Operations Research and the Management Sciences (INFORMS) Conference, San Francisco, CA, 13-16 November 2005. [COA]

APPENDICES

APPENDIX A: FACULTY CREDENTIALS

DEPARTMENT OF AERONAUTICS AND ASTRONAUTICS

BLUE, PAUL A., Maj, Instructor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2004 (AFIT/ENY); BS, University of Nebraska - Lincoln, 1993; MS, University of Minnesota - Twin Cities, 1995; PhD (ABD), University of Minnesota - Twin Cities, 2004. Maj Blue's research interests include the guidance and control of aerospace vehicles and the flight-testing of advanced control concepts. His current research is focused on autonomous collision avoidance and path planning for UAVs and robust control of high-performance aircraft. Maj Blue's prior assignments include Flight Control Research Engineer at the Air Vehicles Directorate of the Air Force Research Laboratory and Exchange Engineer at the German Aerospace Center. He has several publications, including a textbook on robust control with Prof. Juergen Ackermann et al. Tel. 937-255-3636 x4714 (DSN 785-3636 x4714), email: Paul.Blue@afit.edu.

BRANAM, RICHARD D., Maj, Assistant Professor of Aeronautical Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2005 (AFIT/ENY); BS, Aerospace Engineering, The Ohio State University, 1993; MS, Aeronautical Engineering, Air Force Institute of Technology, 1997; PhD, Aerospace Engineering, The Pennsylvania State University, 2005. Major Branam's primary research areas of interest are rocket propulsion and hypersonics. Previous assignments include research scientist at the German Aerospace Center in the area of supercritical injection and as program manager of the upper stage rocket demonstration at the Air Force Research Laboratory. Tel. 937-255-3636 x7485 (DSN 785-3636 x7485), email: richard.branam@afit.edu.

CANFIELD, ROBERT A., Associate Professor in Aeronautics and Astronautics, Department of Aeronautics and Astronautics, 2000 (AFIT/ENY); BSE, Mechanical Engineering, Duke University, 1983; MS, Aeronautics and Astronautics, Stanford University, 1984; PhD, Engineering Mechanics, Virginia Polytechnic Institute and State University, 1992. Dr. Canfield's research interests include structural optimization, multidisciplinary analysis and design methods, structural dynamics and controls, and aeroelasticity. He has published 31 journal articles and 45 papers in conference proceedings on these topics. Dr. Canfield is the former Program Manager for Computational Mathematics at the Air Force Office of Scientific Research (AFOSR) and AFOSR Director of Policy and Integration. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. Tel. 937-255-3636 x4723, (DSN 785-3636 x4723), email: Robert.Canfield@afit.edu.

COBB, RICHARD G., Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2001 (AFIT/ENY); BS, the Pennsylvania State University, 1988; MS, Air Force Institute of Technology, 1992; PhD, Air Force Institute of Technology, 1996. Research interests include dynamics and control of flexible space structures, vibration isolation and suppression, system identification techniques and applied applications of optimal control theory. Prior to teaching at AFIT, Dr. Cobb was responsible for the establishment of an Air Force wide Reliability Centered Maintenance program to enhance jet engine reliability. In recognition of his accomplishments, Dr. Cobb was selected as the 2001 Senior Military Engineer of the Year for the Aeronautical Systems Center. Prior to his assignment at WPAFB in September 1999, Dr. Cobb served as program manager for the Air Force Research Laboratory's TechSat 21 program, a revolutionary satellite technology program investigating the feasibility of using distributed micro-satellite constellations to satisfy Air Force global sensing requirements. While at Kirtland AFB NM, Dr. Cobb also served as the technical advisor for the Space Vehicles Technology Branch, and Chief of the Dynamic Systems Group. Tel. 937-255-3636 x4559 (DSN 785-3636 x4559), email: Richard.Cobb@afit.edu.

FRANKE, MILTON E., Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1959 (AFIT/ENY); BME, University of Florida, 1952; MSME, University of Minnesota, 1954; PhD, The Ohio State University, 1967. Research interests include fluid transmission lines, thrust vector control, high lift aerodynamics, fluidics, cavity acoustics, thrust augmenting ejectors, heat transfer, electrostatic cooling, boundary layers, aerodynamic in-ground effects, lean aerospace initiatives, reusable launch vehicles, and engineering of complex systems. Dr. Franke has authored or co-authored over 130 technical articles. He holds five patents, was the recipient of the AFIT Charles A. Stone Award in 1986 and the AFIT Bernard A. Schriever Award in 1993. Dr. Franke is a retired colonel in the Air Force Reserve. He is a member and past chair (2001-2006) of the Committee on Organization and Rules (a committee of the ASME Board of Governors), past Vice President for Communications of the ASME (1990-1992), past Vice President for Systems and Design of the ASME (1993-1996), co-chair of the AIAA Weapon System Effectiveness Technical Committee, a Fellow of the ASME, and Associate Fellow of the AIAA.

GREENDYKE, ROBERT B., Associate Professor of Aeronautics and Astronautics and Director, AFIT Scientist and Engineer Education Programs at Kirtland AFB; Appointment Date: 2005 (AFIT/ENY); BBA, Economics, Baylor University, 1979; BS, Aerospace Engineering, Texas A&M University, 1986; MS, Aerospace Engineering, Texas A&M University, 1988; PhD, Interdisciplinary Engineering, Texas A&M University, 1998. Dr Greendyke research interests include computational fluid dynamics, Direct Simulation Monte Carlo methods, hypersonic and reacting flows, radiation simulation, thermophysics, and plasma simulation. Dr Greendyke was a Research Scientist at NASA-Langley Research Center studying re-entry and aerobraking flows, and an Associate Professor in the University of Texas at Tyler establishing a start-up Mechanical Engineering Program from concept through accreditation. He has published over 30 journal articles, technical reports and conference publications in multiple fields. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. Tel. 505-853-3381 (DSN 263-3381), email: robert.greendyke@afit.edu.

HICKS, KERRY D., Lt Col, USAF Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2004 (AFIT/ENY), BS Aeronautical and Astronautical Engineering, University of Illinois (UIUC), 1985; MS Astronautical Engineering, Air Force Institute of Technology, 1986; PhD Astronautical Engineering, Air Force Institute of Technology, 1989. Lt Col Hicks' research interests include astrodynamics, re-entry dynamics, and electric space propulsion with emphasis on numerical solutions and mathematical modeling. He has published several conference papers and journal articles as well as DoD publications. He is a member of Tau Beta Pi and a Senior Member of AIAA. Tel. 937-255-3636 x4568 (DSN 785-3636 x4568), email: Kerry.Hicks@afit.edu.

JACQUES, DAVID R., Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1999 (AFIT/ENY); BSME, Lehigh University, 1983; MSAE, Air Force Institute of Technology, 1989; PhD, Air Force Institute of Technology, 1995. Dr. Jacques' primary research is in the field of stability and control of air and space vehicles. He has published several papers on constrained optimal control synthesis, and co-authored a software toolbox that utilized his synthesis techniques. Current research addresses cooperative behavior and control for air and space vehicles, and general Systems Engineering theory and application. Dr. Jacques has extensive experience in munition system development and analysis, as well as ballistic system test. He is the curriculum chair for Systems Engineering and serves as Chief, Education and Training Division, AF Center for Systems Engineering. Tel. 937-255-3355 x3329 (DSN 785-3355 x3329), email: David.Jacques@afit.edu.

KING, PAUL I., Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1991 (AFIT/ENY); BS, Arizona State University, 1971; MS, Air Force Institute of Technology, 1972; PhD, Oxford University, England, 1986. Former faculty member at the U.S. Air Force Academy and Cleveland State University, Cleveland, Ohio. Dr. King's research interests include internal and external aerodynamics and heat transfer (wings and bodies, turbomachinery and other applications). His research emphasizes experimentation and simulations. Tel. 937-255-3636 x4628 (DSN 785-3636 x4628), email: Paul.King@afit.edu.

KUNZ, DONALD L., Associate Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2003 (AFIT/ENY); BS, Syracuse University, 1971; MS, Georgia Institute of Technology, 1972; PhD, Georgia Institute of Technology, 1976; Dr. Kunz's research interests include rotorcraft dynamics, vibrations, and loads, structural dynamics, aeroelasticity, multibody dynamics, smart structures, and computational structural mechanics. He has published more than 60 journal articles, conference papers, and technical reports. Prior to coming to AFIT, Dr. Kunz worked at the US Army Aeroflightdynamics Directorate, McDonnell Douglas Helicopter Company, Old Dominion University, and the US Army Aviation and Missile Command. He is an Associate Fellow of AIAA; a member of AHS and ASME; and a licensed professional engineer in the Commonwealth of Virginia. Tel. 937-255-3636 x4548 (DSN 785-3636 x4548), email: Donald.Kunz@afit.edu.

LIEBST, BRADLEY S., Professor of Aerospace Engineering and Head, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1989 (AFIT/ENY); BS, Wichita State University, 1978; MS, Massachusetts Institute of Technology, 1979; PhD, Massachusetts Institute of Technology, 1981. Dr. Liebst's research interests include eigenstructure assignment and control, stability and control of aerospace vehicles, passive and active control of large flexible structures, and aircraft handling qualities. He has published over 30 articles and reports and chaired over 40 theses and dissertations. Prior to teaching at AFIT, Professor Liebst was Assistant Professor of Aerospace Engineering for 6 years at the University of Minnesota where he was voted the 1987 Best Institute of Technology (U of M) Professor. Tel. 937-255-3636 x4636 (DSN 785-6565 x4636), email: Bradley.Liebst@afit.edu.

MALL, SHANKAR, Professor, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1986 (AFIT/ENY); BS, Mechanical Engineering, Banaras Hindu University, India, 1964; MS, Mechanical Engineering, Banaras Hindu University, 1966; PhD, Mechanical Engineering, University of Washington, 1977. Dr. Mall's research centers on composite and smart materials, fatigue and fracture. Dr. Mall has authored over 100 papers and has been the co-editor of a book and five conference proceedings. He is a Fellow of ASME, Associate Fellow of AIAA. He is also the Principal Materials Research Engineer, Materials and Manufacturing Directorate, Air Force Research Laboratory. He is associate editor of several journals. Tel. 937-255-3636 x4587 (DSN 785-3636 x4587), email: Shankar.Mall@afit.edu.

MAPLE, RAYMOND C., Lt Col, Associate Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2002 (AFIT/ENY); BS, Cornell University, 1985; MS, Air Force Institute of Technology, 1989; PhD, Air Force Institute of Technology, 2002. Lt Col Maple's interests include computational fluid dynamics and parallel computing, with an emphasis on algorithm development, visualization, fluid-structure interaction, and aircraft store separation applications. Lt Col Maple is a senior member of the American Institute of Aeronautics and Astronautics (AIAA). Tel. 937-255-3636 x4577 (DSN 785-3636 x4755), email: Raymond.Maple@afit.edu.

PALAZOTTO, ANTHONY N., Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1975 (AFIT/ENY); BS, New York University, 1955; MS, Brooklyn Polytechnic Institute, 1961; PhD, New York University, 1968. Professor Palazotto's interests include nonlinear mechanics, shell analysis, finite elements, composite materials, viscoplasticity and nonlinear dynamics. Dr. Palazotto is the co-author of a textbook, "The Nonlinear Analysis of Shell Structures," published in 1992 by the AIAA. In addition he has authored over 165 archival technical publications and more than 330 technical reports and manuscripts. Dr. Palazotto received the Hetanyi Award in 1982 from the Society of Experimental Mechanics, the Cleary Award in 1981 from the Air Force Materials Lab, and the Structures and Materials Award from the ASCE in 1986. Dr. Palazotto is a Fellow of the ASCE and an Associate Fellow of the AIAA. He is a registered Professional Engineer. Tel. 937-255-3636 x4599 (DSN 785-3636 x4599), email: Anthony.Palazotto@afit.edu.

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APPENDIX C: ABBREVIATIONS FOR ORGANIZATIONS

There are a number of abbreviations for organizations and scientific journals and terms that are used in this report. This alphabetical listing includes only selected organizations, journals, and terms.

AFMC/46SK	Air Force Seek Eagle Office (AFSEO)
ACC	Air Combat Command
ACES	Applied Computational Electromagnetic Society
AETC	Air Education and Training Command
AFCEE	Air Force Center for Environmental Excellence
AFCESA	Air Force Civil Engineer Support Agency
AFIT	Air Force Institute of Technology
AFLMA	Air Force Logistics Management Agency
AFMC	Air Force Materiel Command
AFOTEC	Air Force Operational Test and Evaluation Center
AFRL	Air Force Research Laboratory
AFRL/AFOSR	AFRL/Air Force Office of Scientific Research
AFRL/DE	AFRL/Directed Energy Directorate
AFRL/HE	AFRL/Human Effectiveness Directorate
AFRL/IF	AFRL/Information Directorate
AFRL/ML	AFRL/Materials and Manufacturing Directorate
AFRL/MN	AFLR/Munitions Directorate
AFRL/PR	AFRL/Propulsion Directorate
AFRL/SN	AFRL/Sensors Directorate
AFRL/VA	AFRL/Air Vehicles Directorate
AFRL/VS	AFRL/Space Vehicles Directorate
AFCA	Air Force Communication Agency
AFSC	Air Force Security Agency (AF Security Police Agency)
AFSEO	Air Force Seek Eagle Office (46 SK/SKE)
AFSPC	Air Force Space Command
AFTAC	Air Force Technical Applications Center
AFWA	Air Force Weather Agency (Air Weather Service)
AHS	American Helicopter Society
AIA	Air Intelligence Agency
AIAA	American Institute of Aeronautics and Astronautics
AMC	Air Mobility Command
ARDA	Advanced Research and Development Activity
ASME	American Society of Mechanical Engineers
ASC	Aeronautical Systems Center
AU	Air University
BAA	Broad Agency Announcement
CCD	Charge-Coupled Device
CRADA	Cooperative Research and Development Agreement
CRC	Cyclic Redundancy Check
CuPIDS	Co-Processing Intrusion Detection System
DAGSI	Dayton Area Graduate Studies Institute
DARPA	Defense Advanced Research Projects Agency
DE	Directed Energy Directorate
DISA	Defense Information Systems Agency
DoD	Department of Defense
DOE	Department of Energy
doi:	Digital Object Identifier
DoS	Department of State
DTRA	Defense Threat Reduction Agency

ECCOMAS	European Community on Computational Methods in Applied Sciences
EM	Electro-magnetic
ERP	Enterprise Resource Planning
ESTCP	Environmental Security Technology Certification Program
FDTD	Finite Difference Time Domain
FPGA	Field-Programmable Gate Arrays
GPS	Global Positioning System
HELEEOS/SHARE	High Energy Laser End to End Operational Simulation / Scaling for HEL and Relay Engagement
HEL	High Energy Laser
HPC	High Performance Computing
HQ AU	Headquarters, Air University
IDE	Intermediate Developmental Education
IEEE	Institute of Electrical and Electronics Engineers
INCOSE	International Council on Systems Engineering
INFORMS	Institute for Operations Research and the Management Sciences
INS	Inertial Navigation Systems
ISSMO	International Society for Structural and Multidisciplinary Optimization
LADAR	Laser Radar
MASINT	Measurement and Signatures Intelligence
MC-CDMA	Multi-Carrier Code Division Multiple Access
MEMS	Micro-Electro-Mechanical Systems
MORS	Military Operations Research Society
MPSK	M-ary Phase Shift Keying
MRF	Markov Random Field
NAIC	National Air and Space Intelligence Center (NASIC)
NASA	National Aeronautics and Space Administration
NASIC	National Air and Space Intelligence Center
NSA	National Security Agency
NSF	National Science Foundation
NSSA	National Security Space Architect
NSSO	National Security Space Office
OFDM	Orthogonal Frequency Division Multiplexing
OO-ALC	Ogden Air Logistics Center
OSD	Office of the Secretary of Defense
PACAF	Pacific Air Forces
RCS	Radar Cross Section
RFID	Radio Frequency Identification
ROC	Receiver Operating Characteristic
SAE	Society of Automotive Engineers
SAF	Secretary of the Air Force
SAR	Synthetic Aperture Radar
SERDP	Strategic Environmental Research & Development Program
SBS	Stimulated Brillouin Scattering
SIBR	Small Business Innovation Research
SPC	Statistical Process Control
SPIE	The International Society for Optical Engineering
STRATCOMM	United States Strategic Command
STTR	Small Business Technology Transfer Program
Stupid's	Standard Unit-Processor Intrusion Detection System
SWC	Space Warfare Center
TDCS	Transform Domain Communications System
USAF	United States Air Force
USSOCOM	United States Special Operations Command
WPAFB	Wright-Patterson Air Force Base

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This report summarizes the research activities of the Air Force Institute of Technology's Graduate School of Engineering and Management. It describes research interests and faculty expertise; lists student theses/dissertations; identifies research sponsors and contributions; and outlines the procedures for contacting the school. Included in the report are: faculty publications, conference presentations, consultations, and funded research projects. Research was conducted in the areas of Aeronautical and Astronautical Engineering, Electrical Engineering and Electro-Optics, Computer Engineering and Computer Science, Systems and Engineering Management, Operational Sciences, Mathematics, Statistics and Engineering Physics.

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